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Dirty Weather Help

A computer-aided project at Parks College of Aeronautical Technology of Saint Louis Univeristy is helping researchers discover how best to train private pilots for bad weather flying. Many accidents occur when pilots encounter bad weather and lose the instrument skills to fly out of it. The school uses an IBM 1130 to help determine how long after certification pilots begin to lose instrumentation flying abilities, and from these studies will recommend what recurrent training is needed.

Price Increases Are Planned Throughout the T/S Industry

By Phyllis Huggins
CW West Coast Bureau

LOS ANGELES – While price cutting was the name of the game in 1968 and 1969, the time-sharing industry is now seeing a complete reversal of this competitive action.

As Tom O'Rourke, president of Tymshare Inc., put it, "We figured out our budget for 1970 and found that the number of people was right, but the cost had gone up 20%." Tymshare recently put through a 12% to 15% price increase.

Allen-Babcock Computing Co. also recently raised its prices 18%. General cost increases were cited as the reason. The industry is currently experiencing both major cutbacks, as the facts of economic life face them at year's end, and price increases. Tymshare said, "We have had people from other companies coming through here recently for jobs but we aren't cutting back. In fact, Nov. 1 we opened an office in Boston and Dec. 1 we opened one in Oakland, Calif."

Arthur Speckhard, president of Intranet Industries Inc., a time-share, remote batch company that also offers full software and facilities management services, as well as its own line of hardware terminals, said, "For success in this field you can't be in a position where you are dependent upon the technological base of the mainframe manufacturer or anyone else. You have to be able to build up service and products with skills, not just make something that's existing available. Then you can be priced out of it."

Computerworld's **Review of 1969 begins on Page 11 and continues on Pages 12-14.**

Intranet has invested some $1 million in developing its own time-share software and hard-

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T/S Firms Cut Offices, Computers

By Drake Lundell
CW New York Bureau

NEW YORK – "The shakeout of the time-sharing business isn't impending, it's already here," one industry source said last week as *Computerworld* continued its investigation into the extent of the troubles in the industry and the probable effect on time-sharing users.

Initial indications of trouble caused by over optimism and lagging sales among some of the leaders in the time-sharing industry (ITT Data Services, General Electric's Information Services Division, DPF&G) were reported in *Computerworld* Dec. 24.

But the troubles run deeper and now seem to touch on the entire business.

In addition to problems reported by ITT Data Services' West Coast operation [CW, Dec. 24], the firm's East Coast operation is also retrenching, *Computerworld* has learned. Presently, the ITT unit has closed its computer facilities in Princeton, N.J., and at Broad Street in New York City.

Both of the closed offices were equipped with IBM 360/30 computer systems, which will now either be returned to IBM or transferred to other segments of ITT. The Broad Street office is being consolidated with the firm's other New York City data center on Madison Avenue, while the Princeton operation will now be handled from Paramus, N.J., the headquarters for

(Continued on Page 4)

Honeywell to Market UCC Remote Batch 1108s Time

By Drake Lundell
CW New York Bureau

NEW YORK – Honeywell's service bureau and time-sharing arm, the Information Services Division, is now offering remote batch processing on Univac 1108 computers operated by University Computing Co.

Although Information Services Vice-President Claude Smith told *Computerworld* that there was no definite agreement with UCC, University Computing spokesmen admitted, "we have a contract with Honeywell for use of our 1108s." In addition, Honeywell salesmen here are offering the service to potential customers and have already signed contracts with some.

Using the Honeywell Remote Access Service, a user's computer can be attached to the 1108 system allowing the remote system to access the 1108. Editing will be done by the customer's hardware.

Honeywell sources indicate that a large spectrum of hardware can be used with this service, including IBM, RCA, and Honeywell equipment.

According to Honeywell sources, the firm is using the UCC 1108s to gain a quick entry into the remote batch scientific processing field. It might take a year or two for Honeywell to offer comparable service on its own equipment, a spokesman said.

In addition, the Information Services Division is supplying time-sharing on the Honeywell 1648 system and it hopes to be able to offer commercial remote batch service on the Honeywell 3200 early next year.

The Mod 4 software system for the 3200, which will allow remote batch service, is still in the experimental stage.

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Congress Warned on Two Proposed Giant Data Banks

By A CW Staff Writer

WASHINGTON, D.C. – "Individual dossiers on 33 million Americans will be prepared and housed in federal computers if two new data banks are approved by Congress," warned Rep. Jackson E. Betts of Ohio.

The data banks "are integral but little-noticed parts of the Family Assistance Act of 1969 and the Manpower Training Act of 1969 now in formative stages of consideration by House and Senate committees," declared Rep. Betts. "There is no provision in either bill to protect the privacy of citizens whose personal histories will be in these dossier centers," he charged.

Although most of the dossiers already exist on the state level, Betts is particularly concerned that they will be centralized in government computers in Washington for the first time. He is also concerned about the probability that for the first time the data banks will be tied together.

Welfare Recipient Files

The Family Assistance Act is President Nixon's plan for a minimum annual income. One provision would require that the Social Security administration build up a data bank to determine individual eligibility. In effect, records now maintained by state welfare departments would be centralized in the Social Security administration computers.

Betts noted that the Social Security administration would make these dossiers available to state welfare offices, who would follow state procedures on privacy. "So we would have 50 different levels of confidentiality," he said.

Job Bank

The national Manpower Training Act calls for the establishment of a national job bank and for computer matching of people and jobs.

"Once operational," Betts declared, "anyone registering with a public employment service office would find a detailed personal file of facts about him, his financial situation, and complete job experience record linked to a national network of computers."

According to Betts, the system would be state based but with a central computer in Washington. The Secretary of Labor hopes to have the system in operation in 55 cities by June, 1970.

Betts added that "not just poor people use the U.S. Employment Service." Many new college graduates and others use it too, he said.

Not Just Statistics

Dossiers on 33 million people would be put in these data banks within the first few years, Betts estimated. This number is based on the estimate of 25 million people living below the poverty line and 10 million people who used public employment offices throughout the U.S. in 1968. Only 2 million of the latter group were also eligible for public assistance.

"These data banks will not be

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Notice to Subscribers

This is *Computerworld's* special year-end combined issue. The next issue will be dated January 14 and should reach subscribers around Jan. 12.

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System/3, Part III: Costs Compared

Prospective Users Don't Plan to Save Money

By Frank Piasta
CW Staff Writer

Unit-record users say they are not saving money by going to System/3.

Installation managers know that the new system will cost more; but they justify the increase by pointing to new applications that previously were impossible with unit-record equipment.

These new users, however, may not realize just how much more it will cost.

Parallel Run

Tab managers, in a recent survey, told CW that they were planning to allow from six months to a year of parallel operation to convert to the new system.

A surprising number of installations, moreover, are going to try to make the conversion in one month or less.

These users justify their position based on three factors: time, space, and money.

The shipping dates given them by IBM have been so distant, as long as 21 months in some cases, that many managers have come to the conclusion that they can do all of their program testing and the bulk of their file conversion before the new system arrives to make maximum use of this lead time.

Space Tight

Characteristically, they report that the machine room is crowded. With tabulators, reproducers, and calculators, tied together by serpentine, gray cables; with interpreters, collators, sorters and card racks crowding the corners; with operators vying for the floor space with card-boxes and stacks of forms, the harried tabman can't picture himself making room, in addition, for a computer and a unique set of peripheral equipment.

The manager's third consideration is money. To do everything twice, in parallel operation, costs money.

Labor costs go up, supply costs go up, and machine costs for two complete systems go way up.

There might not be enough time or enough money available, however, to make System/3, or for that matter any computer up-grade, work.

Long lead time would be very advantageous if it meant a corresponding increase in computer time available for testing. There are definite limits on the number of test hours available from IBM and the large number of systems on order indicate tight scheduling of test time.

IBM Centers

On the subject of the facilities that IBM will make available to their System/3 users, a spokesman for IBM said there were currently 54 basic system centers in operation.

Although he refused to speculate on the ultimate number of centers that might be established, he said that IBM is basing the number of systems on the needs of its customers.

However, he did state that 40 of the basic systems centers will have conversion equipment installed by June, 1970. All of the centers will be so equipped by the end of January, 1971.

The spokesman indicated that resources will vary from center to center, depending on geographical location and the number of customers in the area. Three categories of system centers are scheduled to be established, large, medium, and small.

The large centers, which will at first be located in major cities, will be equipped with at least three System/3s, a 360/20, an 1130, a 6400 accounting machine, and unit-record equipment.

The medium center will have all of the above, except that two System/3s will be available. The small center will have one System/3 and unit-record equipment.

Exact configurations will vary from location to location depending on local conditions. But each center will be equipped for testing, conversion, and training, with an IBM technical staff available to the user for consultation.

The new hardware will probably arrive with the programs insufficiently tested and with the total software system having survived only a cursory shakedown, some sources say.

Dangers Possible

The cost of a full parallel run is high, but the danger inherent in putting into live operation an untried system is apparent to the experienced observer. The savings could become a negative value if a serious system bug caused extensive reruns. A full month's work, or more, might have to be reconstructed.

Inexperienced personnel are most likely to cause this type of error, and most System/3s probably will be programmed by inexperienced personnel.

Programming?

CW spoke to a cross section of prospective users and found that the typical installation manager is planning to do his own programming. "I've been wiring all of my own boards," is the extent of programming experience indicated by most.

The user knows his tab-card installation, but is this really sufficient? Yet, most managers say they are not going to use any more of the systems support offered by IBM than they have to. Cost is the primary reason for this reluctance. When asked by CW if his firm was going to IBM for system help, the data processing manager for a small midwestern manufacturer answered, "Yes, but not as much as we would have if it were cheaper." Similar feelings were expressed by most of the other users contacted.

Hardware Costs Up

System/3 hardware is the most obvious item in the list of increased costs. After speaking with many small users-to-be, CW found that the increase in rental costs over their tab equipment range from $200 to over $1,000 per month, averaging $550.

This might not sound very high to some, but when it represents an increase of 25% to 50% or more of the hardware budget, it is very serious for small companies.

Tab equipment is limited in the type and number of applications, but it is cheaper than System/3. A small installation equipped with the basic models of the necessary machines could be leased for under $700 per month.

This would include: sorter, collator, reproducer, tabulator, calculator, keypunch and verifier. If more powerfully equipped models of the above equipment were selected, the price would still be under $1,200 per month, which is the price of a card-oriented System/3, with minimum configuration.

CW's study indicated that most of the installations contacted were paying only minimal overtime charges amounting to 50% of the regular leasing hourly rate. This eliminates one of the real dollars and cents justifications for the faster computer system.

New Applications

To justify the acquisition of a System/3, most users cited the new applications possible at a modest increase in cost. After listing a half-dozen systems he intended to implement, the manager for a small insurance company said, "We could have done most of these on our current equipment, but we could never afford the time."

The new applications cited ranged from the routine applications: accounts payable, accounts receivable, and payroll to the more exotic areas of dynamic scheduling of machines and manpower, and various analytical runs with an emphasis on exception reporting.

Payroll Not Affected

Personnel costs, if current plans prevail, will not be affected significantly. Tab operators will be retrained to operate the System/3, while the programming will be done by the installation manager.

The managers felt, almost without exception, that unless their system was significantly expanded, they would be able to design and implement their new systems with a minimum of help.

The DP manager for a furniture company said, "If we get bigger and go to a disk system, that will be something else. Then we might have to get a programmer . . . I've been wiring all the boards myself until now, but if we get bigger, I won't be able to do it."

This approach was tried before. With the advent of the 1401, many installations tried to use the same approach, with mixed results, mostly bad.

It might be advisable for the potential System/3 users to get together with their more experienced colleagues. They could come away with a more realistic view of the problems they will face.

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Time-Share Firms Cut Offices, Computers, Services

(Continued from Page 1)

ITT's time-sharing operations.

In addition, ITT Data Services has closed its Programming Service Division's sales office in New York and consolidated it with the operation on Madison Avenue. ITT would not comment on reports circulating of other shutdowns, but did say "the situation is being reviewed and, if it seems to be consistent with good business practices, other offices will be closed."

ITT, like all of the firms in the time-sharing field, refuses to divulge employment statistics, but *Computerworld* learned that after the recent 10% cut in personnel, divisional employment at the end of 1969 will be at approximately the same level as at the end of 1968.

In comparison to ITT's seeming lack of personnel growth, GE reported that overall employment in its Information Services Division was up 30% over last year – even after accounting for the recent personnel reduction that was estimated at as much as 20% of the divisional employees.

Another firm currently experiencing some difficulties in the personnel field is Honeywell's Information Services Division, *Computerworld* learned. At present the division has placed a freeze on new employment, and some sources say it is not replacing personnel that have left the firm.

Honeywell Freeze

Honeywell spokesmen said the manpower freeze is only a "temporary measure" and that the manpower buildup "should be back on schedule by the first of the year." The spokesmen refused to say how long the manpower ceiling has been in effect, but some sources said hiring stopped before October. The Information Services Division is reportedly the only Honeywell unit with a manpower freeze at the present time.

In other areas, Honeywell claims that it is on schedule. The firm had announced plans to open 10 East Coast offices in the first 18 months of business and opened six during 1969. The other offices "will be opened on schedule," the spokesmen said. Rumors that deliveries of the 1648 time-sharing computer were behind schedule were also categorically denied.

Computer Network Corp. (Comnet) is also going through a period of "readjustment to meet present market conditions," CW discovered. The Washington, D.C.-based firm has already closed two recently opened computer centers, one in Bala Cynwyd, Pa., and the other in East Orange, N.J.

Comnet is presently maintaining its sales offices in the two areas and handling New York City and Philadelphia customers through its Washington headquarters. The two Burroughs 5500 systems that were located at the now closed centers have been sublet, a Comnet spokesman said.

Comnet, like GE [CW, Dec. 24], said that business was up during the past year. The office closings, Comnet said, were a simple cost-cutting move to boost its profit margin. Also like GE, the firm admitted that it had misjudged the rate of growth for new segments of the industry.

Comnet, which predicted a bright financial future for itself after this initial period of readjustment, admitted that the new computer services offering raw time without support had cut into its business. Many of these firms, spokesmen said, have come in with sub-par prices which have drained some customers away from other services.

However, Comnet said, these "cheap" services are only hurting themselves in the long run, because they will not be able to capture a significant share of the market without developing a line of applications packages and offering more support than at present.

In addition to problems reported by these relatively established firms in the time-sharing market, many of the newer time-sharing companies are also suffering from present market conditions, reports circulating here indicate.

Smaller Firms Troubled

Some of these smaller firms are reportedly having a great deal of trouble finding financing – either through public offerings or through private placements, one source said. Many of the privately held firms have received support from the mutual funds in the past, he said, but with the market on a downswing, the mutuals are taking a closer look at all of their speculative ventures.

The effect of the shakeout on the user is hard to determine at the present and could go either way depending on the user's level of sophistication.

Overall the future looks bright, but not as bright as at this time last year. The $1.5 to $2 billion remote computing market predicted for 1975 has probably been put off for a year or 18 months, according to GE's Paul Sage, but, as one of his competitors said, "Any company that can survive the next two years is on the gravy train."

Honeywell to Market UCC Time on 1108s

(Continued from Page 1)

A product of Honeywell's Computer Control Division, the 1648 is now used as a dedicated time-sharing system. It typically consists of two 32K Model 516 processors used for problem solving, one 4K 416 processor handling the communications, two disk controllers, and four or five disk drives. In addition, card readers, line printers and other peripherals are attached as required.

1648 Non-Remote

The 1648 – the key to Honeywell's time-sharing operation – does not permit remote job entry, Honeywell said.

Even though Honeywell sources told *Computerworld* that the agreement with University Computing was a national arrangement, at present details are available only on the New York City operation, which was established last July.

The New York office has yet to install its own 1648 and is now linked to a 1648 in Boston, as is the Honeywell Washington, D.C., time-sharing operation.

By early next year, Honeywell spokesmen said, the New York office will be operating on its own 1648, in addition to at least one Honeywell 200 and, hopefully, a 3200.

When the New York 1648 is installed, it will be interconnected into one of the ports on the University Computing 1108 in East Brunswick, N.J., Honeywell sources said.

When a Honeywell time-sharing customer needs the power of the 1108 for a large job, data can then be entered directly from his terminal through the 1648, thus allowing the 1108 to interact with the customer's files stored in the 1648.

Printout from the job, which would then be handled on a remote batch basis by the 1108, could be either at the user's terminal, at the 1648 site equipped with a variety of printers, or at the Honeywell service bureau in downtown Manhattan.

Large Time User

A Honeywell spokesman said that the agreement with UCC was an "almost natural" extension of other agreements between the two firms. Honeywell, he said, is a large user of UCC 1108 time in its Aerospace Division, and when the decision was made to enter the remote batch scientific field as soon as possible, the deal with UCC was arranged.

The agreement with UCC should help Honeywell beef up both its time-sharing and remote job entry business, Honeywell sources said. Presently, in New York, time-sharing accounts for about 20% of the Information Services Division's revenue and remote job entry around 30%. The main source of revenue is contract programming, which amounts to 40% of present sales. The remaining 10% is attributed to classical service bureau business, according to a Honeywell spokesman.

Price Increases Seen for T/S Industry

(Continued from Page 1)

ware configuration based on the Univac 1108.

It plans to network the system using local area talent and capital financing.

"Networks are not a growth element," commented Speckhard. "They're essential. The plateau of profit is high and getting higher all the time. You can't have only one center. This is why there is the emphasis on networks and why only the big ones will survive."

GE has recently raised its time-share service bureau prices 10% and IBM's Service Bureau Corp. upped time-share services prices an average of 14%.

Ronald F. Morrison, president of Boothe Resources International and a former director of IBM's blue ribbon Hundred Percent Club, said that a company that just offers raw machine time is too vulnerable to price-cutting.

"Our concept is to work with the customer, to bring his entire data processing requirements into our house."

1970 is already shaping up as the shakeout year for the service bureaus.

Industry experts have predicted it as being a fast and brutal process. It appears to be underway at this time.

This shakeout comes at a time when unbundling is expected to release vast new sums for software and machine services by private companies. Undaunted by the current upheavals in the industry, Computer Sciences Corp. is expected to announce its time-share network as operational in February.

The service, Infranet, represents what industry sources estimate to be a multimillion dollar investment in development costs alone.

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Fair Credit Reporting Bill Now Awaiting House Action

WASHINGTON, D.C. – No action is expected on Sen. William Proxmire's Fair Credit Reporting Bill until well into 1970.

The bill passed the Senate Nov. 6 and is now waiting for action by the Subcommittee on Consumer Affairs of the House Banking and Currency Committee. The Proxmire bill would be an amendment to the Consumer Credit Protection Act which was written by Subcommittee Chairman Leonor K. Sullivan (D-Mo.).

Committee staff aide Charles Holstein said that Miss Sullivan "is very much in sympathy with the ideas contained in the proposal." But he also noted that she recently said that she was opposed to expanding the Consumer Credit Protection Act until it is working correctly.

Holstein said that Miss Sullivan has not had time to consider the bill yet, but that "representatives of the consumer credit reporting industry have already come to her to say that they can live with the current bill. They are afraid that she might expand it and make it stronger the way she did with the Consumer Credit Protection Act."

New York Also Acts

Proposals to regulate credit bureaus are also being made on the state level. A bill has been filed with the New York state legislature nearly identical to one that was passed in Massachusetts this year.

The bill would require that if an individual is denied credit, wholly or partly because of a credit bureau report, the person must be told of that fact and be given the name and address of the credit reporting agency making the report.

Credit Bureaus Computerizing

When he originally proposed his Fair Credit Reporting Bill, Proxmire noted that he was particularly concerned about the growing computerization of credit bureaus. He warned that in addition to freezing in errors already in the files, computerization would probably add more errors due to bugs that enter during the conversion period.

Official Denies Pro-IBM Bias Is Delaying CCD's Computer Choice

DENVER, Colo. – A state official has denied that any pro-IBM bias is causing delays in selecting a computer for Community College of Denver.

The official, who did not wish to be identified, said that there might be some bias for the corporate giant, but that it would be "coincidental" to selection of ADP equipment.

The official was commenting on bias charges made by CCD students who face the distinct possibility of graduating from a two-year data processing course without ever seeing a computer [CW, Dec. 10].

The students claim that irregularities have occurred favoring IBM, and they cite for evidence the fact that virtually every state school with administrative capabilities is equipped with an IBM computer.

They charge that bias is causing delays for "re-evaluation" of proposed systems. State officials admit that evaluations are not objective, and that low bidders do not always get contract awards.

A new state policy requires that all vendors be informed of upcoming purchases, and the state says that resultant communications needs are causing the delays.

The students disagree. They say that faculty and other expert evaulations consider capabilities and economics, and once a computer is selected, the procurement should follow quickly. Meanwhile, the computer center at Denver's state-run community college remains empty and un-used.

System Sharing Idea Urged

A spokesman for the Colorado Commission of Higher Education (CHE) said that the commission was trying to establish a centralized system for about six colleges in the Denver area. It is possible that one central processor will be chosen, with remotes in the other five colleges; no one knows yet who will get the processor.

The students say that the commission's system sharing idea is fine for exchange and processing of administrative data, but they say that their data processing education will be "second-rate" if they can't get "hands-on" experience with a real, full-size computer.

A CHE spokesman told CW that the commission hoped to make recommendations by the end of the year, and that he was hopeful that delivery of a computer could be anticipated for March of 1970.

He said that the commission would soon make a "decision in principle," that is, whether each of the schools should have its own computer, or that the system sharing idea should prevail.

The spokesman said that of 12 vendors who received "requests for proposals" from the state, about seven showed an interest in CCD's purchase intent. Requests for proposals have not been sent out for the system sharing principle.

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None of the past, nor any of the future would be possible without you – our subscribers and advertisers – our customers. Thank you for this past, and thank you in advance for the future.

We are proud to share with you in an industry growing at the rate of one billion dollars a year.

May we at COMPUTERWORLD extend to you our best wishes for this Holiday Season, and continued prosperity in 1970.

Sincerely,

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Neal Wilder
National Sales Manager

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Computer's Role Not to Replace Middle Management, but to Keep It Informed

LOS ANGELES – The computer will never replace people at the middle management level in business, despite gloomy predictions to the contrary, says a University of Southern California business educator.

Rather, that electronic marvel is helping generate new and more efficient management styles and is enabling executives at all levels to function better, Dr. Milton G. Holmen, professor of management in USC's Graduate School of Business Administration, said in an interview.

"It has been proven that the number of middle management functions which can be computerized is 10% or less of such executives' work," Holmen said.

"The application of the computer has, in fact, made middle management people more free to really function as managers.

"With electronic data processing assuming some of their more mechanical burdens, they have more time to act as planners and facilitators, and to help their subordinates solve problems that arise."

Holmen said a key contribution of the computer to management is in giving information to all departments of a firm at all executive levels.

The information keeps all units advised on the status of projects in all other units as well as their own. This gives everyone the "big picture" – an overview that makes possible the "participative management" and "management by objective" concepts.

"For example," Holmen said, "it can be determined quickly that Department A is under budget and ahead of schedule, and Department B is over budget and behind schedule. This makes it possible for some of A's budgetary resources to be allocated to B, which is lagging behind.

"With the use of the computer, everyone in the organization knows more and can see where everyone else is in terms of the organization's overall objectives and projects," Holmen explained.

Holmen said he has found in his research at USC's Graduate School of Business Administration Management Laboratory that decentralization of management usually increases efficiency.

"And if management is to be decentralized effectively, adequate dissemination of information to all departments and levels of the organization is necessary.

"The computer is virtually indispensable in this role," he added.

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By time-sharing the data from 60 or more keyboard operators simultaneously, significant savings in data station costs of as much as 50% can be achieved. Costs drop to as low as $4300 per data station for a typical 60 station system. For large data preparation installations, the time-shared input is the only economical way to go.

Data entered into the LC-720 is processed by a small digital computer and stored on an IBM/360-compatible magnetic disc that provides the advantages of bulk storage and high speed random access of data. The problems associated with punched card handling or the mounting, pooling, merging and unmounting of magnetic tape reels are eliminated. All data is conveniently and economically stored in an IBM 1316 disc pack for direct high speed input to your modern data processing system. Naturally, an IBM/360-compatible magnetic tape is also provided with the system as standard equipment.

The LC-720 KeyDisc System also offers for the first time, data verification requiring one input pass only through the system, in addition to the normal technique of verification requiring two different operators. Record size is infinitely variable by each operator from 1 to 120 characters long and the system stores a large library of 30 or more different format control programs, all available simultaneously to any and all operators.

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Royalties Given For Programs Used by Company

RED BANK, N.J. – Transnet Corp. has a new plan that can be profitable to computer programmers, and interesting as a concept for other users.

The company is offering royalties for programs submitted to and used by the company on its time-sharing computer system, according to John J. Wilk, president of Transnet.

The programs will be submitted by the author, and the royalties will be paid on the basis of the number of times the program is used in relation to the length of time it is used by means of a formula.

"We feel that this will give programmers an opportunity to get some of their programs in use," Wilk said.

"We are also considering the possibility of allowing programmers to use our system in developing new and unique types of programs in time-sharing," he continued.

Royalties are paid through Ascap, which also handles royalties for musical selections played over radio and television.

Programs using Focal, Basic, Fortran or Pal are acceptable for submission under the new royalty plan.

The company provides computer time-sharing and data processing services to business, industry, science, engineering, and education and uses a Digital PDP-8 time-sharing computer system.

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Congress May Approve Data Banks on 33 Million

(Continued from Page 1)

aggregates of statistics. These will all be personal profiles," emphasized Russell Pite, a Betts aide.

Data Banks May Be Tied

In addition to being concerned about the centralization of data, Betts is also concerned that the new data banks will be tied together. Under the proposed Family Assistance Act, employable persons would be required to seek jobs. Pite said, "We anticipate that several million welfare files will be automatically referred to the job bank."

But Betts is not necessarily opposed to government agencies exchanging files. "In the interests of efficiency and economy we believe that agencies should be permitted to exchange records," Pite said. But he also said that some limitations should be placed on file exchange, and noted that government plans to automate data banks and make them compatible would greatly increase the opportunity for exchange.

Call for Safeguards

"Built-in privacy protections should be legislatively provided at the outset," Betts declared. He proposed that three safeguards be included in the laws authorizing the two data banks:

- Individuals should be allowed to inspect the contents of their files, and if necessary challenge inaccurate information.
- "Once an individual terminates his participation in a public assistance program, his file should be destroyed and the person notified of this action."
- If a file is transferred to another agency, the person should be notified of this fact.

Amend Proxmire Bill?

Betts supports the Proxmire Fair Credit Reporting Bill, but he stated that "before we go after commercial credit bureaus, we should put our own house in order." In addition to suggesting that privacy safeguards be added to the two new data banks, Betts said that he will urge the House Banking and Currency Committee to amend the Proxmire bill so that the same standards apply to the federal government as well as to private credit bureaus.

"While I have long been concerned about the inability of consumers to protect themselves from false credit information, I am amazed that Congress has not questioned whether a similar situation might not also exist in those federal agencies which utilize personal data reports in their normal course of work," Betts declared.

"The vast amount of decentralized individual data stored in Washington, as well as the countless requests for additional personal information, provides fertile grounds for invasions of individual privacy," he warned.

Privacy Just a Detail?

CW previously raised the issue of privacy and the job bank in an editorial Aug. 27, 1969. Joseph Loftus, Special Assistant for Communications of the U.S. Department of Labor, responded with a letter in which he said, "We are very conscious of the importance and the sensitivity of the privacy issue." He explained that the Manpower administration has established a task force to examine "every conceivable aspect of this difficult area."

But Loftus opposed the inclusion in the Manpower Act itself of any privacy controls, explaining, "It was our judgment that this would have added peripheral administrative detail to the customarily substantive provisions of legislation."

The Social Security administration apparently does not have any file system comparable to the one it would have to set up under the Family Assistance Act. According to Lawrence Lewis, a Social Security information specialist, the Social Security administration maintains files on about 20 million beneficiaries, plus inactive files on people who have applied and been rejected.

In addition, they have earnings records on about 180 million people, he said.

The beneficiary files contain applications and supporting evidence, and are available to no other agencies. (Justice and Treasury agencies have access in national security cases).

But state welfare agencies can request information such as date of birth, period of disability, and amount of Social Security payments. In addition, the amount of earnings can be given out if the individual approves.

Complete Social Security files are not kept in machine-readable form, Lewis said. But computers are used to maintain benefit roles, enforce the earnings test (by comparing earnings reported by employers with the maximum allowed), and make payments.

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Editorials

Protection Backlash

Patent infringement suits, intended to enable a software designer to salvage his rights, have backlashed at the user. Control Data Corp. now says, in effect, that if a user is sued for using CDC-supplied software, the user must defend himself at his own expense and pay the plaintiff if he, the user, loses.

Since the cost of such a suit, whether the user wins or loses, is an unknown quantity, this CDC policy is going to cause many users, especially the smaller ones, to think hard before using CDC software.

Suddenly the battle for better software protection, instead of encouraging the development of better software, threatens to reduce the use of outside software.

The only immediate answer available is for CDC to return to the policy of guaranteeing to protect the user against such suits.

A 'Patent' Solution

Patent-search problems can be solved, right now, by computer technology. The only problem is a mis-direction in the attempt to patent programs.

The problems facing those who wish to obtain a patent on a computer program, and facing the patent office in determining the validity of the patent claim, are not a result of the law, but the result of the data explosion facing all aspects of industry and law.

This is a problem that computer people, particularly, should be well equipped to solve.

Many people advocate changing the law to eliminate the complexity of the problem. This running away will not only not solve the problem, but it will not provide a proper means of protecting any type of patentable device.

Data management, expecially through the use of computers, is a clearly solvable problem. It does not suffer from any real degree of complexity, merely one of size.

Size, alone, does not make a problem more complex, simply more difficult and expensive to solve properly. The computer industry possesses the necessary tools to solve the problem. Why aren't they applied, instead of all this shouting and fuming over legalisms?

Not His Kind of Fire

Letters to the Editor

Computer Professionals: Why the Need?

Concerning your editorial: 'Why the Computer Professional?'

As a holder of the Certificate in Data Processing, I feel that your dismissal of the DPMA program was unfair.

The Certificate is not awarded by examination alone. Candidates must have certain experience and academic qualifications. Also, they must have statements of their character made by their superiors prior to being allowed to sit for the examination.

A comparison of the CPA-CDP programs is illogical. The changes in data processing in the last decade were far more complex than the changes in public accounting. A comparison is only possible on the prerequisites for each Certificate.

Your editorial seems to be an attempt to establish yet another "professional elite." This mania to see how many initials you can amass to the right of your name is absurd. Despite your editorial, the only reason I can see for a "computer professional" is to increase the job hunter's base pay. A true professional will do professional work regardless of his initials.

James F. Farkas, CDP
Director – Data Processing
Latrobe Area Hospital
Latrobe, Pa.

There is no question that the DPMA Certificate in Data Processing is better than nothing. The question is whether there should be required licensing of DP people as there is for doctors, lawyers, architects, and other professionals. Such licensing carries legal penalties for practicing without a license and for failing to live up to set standards. Ed.

BIT 483 Presented As Business Minicomputer

In the Dec. 3 issue CW's Software Editor discussed the lack of minicomputers designed with the businessman in mind. I would like to bring to Mr. Briggs' attention the BIT 483, a variable word length minicomputer.

The BIT 483 has been designed for easy data manipulation, has a standard overlapped data channel, and has the ability to perform decimal arithmetic as well as binary arithmetic. All this adds up to a very powerful minicomputer for business applications, especially with some low cost peripherals and some business oriented software packages.

But the BIT 483 is not just a business computer. Its variable word length is also a big help in other applications, such as numerical control and data communications.

I am surprised that Mr. Briggs was not aware of the variable word length BIT 483, since BIT, Inc. has advertised the 483 in CW quite recently. It seems to me that CW's editors should be familiar with the products advertised in their paper.

Mary B. Parent
Staff Assistant

BIT, Inc.
Natick, Mass.

Though the BIT 483 does possess variable-word arithmetic capabilities, this was not the point of the article. The instruction set for the 483 is as far from a business orientation as is the instruction set of the Nova system. No provision is made for moving variable-length character strings, nor for character-oriented compare operations. These are the type of hardware features that support data processing, as opposed to computing. Variable-length bit-oriented arithmetic is not relevant. Ed.

Computerworld welcomes comments from its readers. Preference will be given to letters of 250 words or less. *Computerworld* reserves the right to edit letters for purposes of clarity and brevity. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

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Viewpoint: Computer-Controlled Credit Cards

Reistad Views a Future Cashless, Checkless Society

By Dale L. Reistad

I would also like to bring to your attention certain aspects of the credit card business that merit consideration in the months ahead. In doing so, I would liken the present status of the bank credit card field to that of a ship at sea, now sailing on a stretch of beautiful water after having experienced high seas and stormy skies, but, nevertheless, heading directly into a fog bank – without a single chart, compass, radar device, or radio to assist in the unknown seas ahead. It may be that the fog bank is about to lift, and that the beautiful water will then stretch out beyond, even to infinity. Or, it may be that the fog will get increasingly dense, the navigation more difficult, and the hazards frequent and dangerous.

Some of the more important of these aspects, with implications for what lies beyond the "fog bank," are as follows:

The Card Itself

To begin with, there is nothing sacred about the card itself, either in its size, its content, or its purpose. To be perfectly frank, it does nothing more today than serve to emboss a triplicate deposit ticket. I thought the punched card was sacred; that is, until IBM announced its new computer and new mini-card. Look for radical changes in card design as a result of the new era of supersonic transports, or SSTs. Don't be surprised if future credit cards have no raised letters or font. Credit cards in the future will be electronic cards, not embossed cards.

The Terminal

The electronic cards will activate electronic devices in future systems. Even today you can buy the terminals which will be activated by credit cards in the future. At least a dozen companies produce funds transfer terminals. None (to my knowledge) are being designed to handle today's embossed card. While no single concept yet prevails, there is an obvious trend toward terminal systems which anticipates that some form of electronic storage capacity will exist in the card.

Fund Transfer Computers

The terminals will, in turn, feed into fund transfer computers. The fund transfer computer could be conceptually designed by the average child. The need is for a computer to allow a customer in bank A to transfer money to a merchant that has an account in bank B. It's as simple as that. Today this transfer is accomplished through a bank clearing house. Tomorrow the clearing house will be electronic. In a community of 10,000 there will be over a million transactions flowing through such a fund transfer system, or approximately 100 transactions per person, per year. This includes all types of transactions: credit card, store account, cash, and check.

The Optimizers

Questions are frequently asked about the electronic fund transfer system account structure. The fund transfer center will have a customer record with account number, bank code, verification code, and amount code for each consumer in the service area. The answer to the question "is it a charge or cash transfer transaction, or can both be accommodated by the system?" will vary from bank to bank. Ultimately, however, the customer will just use the system, and the computer at the customer's bank will make the decisions as to whether transactions should be charge or cash transfer. After all, the computer will have access to more information about the transaction than the customer.

Dale L. Reistad, former director of the automation department of the American Bankers Association and now president of Payment Systems Inc., New York, has spent a good deal of his time forecasting the cashless, checkless society.

In this article, excerpted from a speech he made to the Midwest conference of the Charge Account Bankers Association, he looks at forthcoming changes in the credit card field.

Having thus described the probable series of steps beyond the credit card, now what about some curfew on the present era of credit cards? Why not agree to a date beyond which you will switch from first generation to second generation credit cards and related systems? Why not begin to plan now for what is certain to lie beyond today's credit card? I can assure you that certain lead banks and others are already well engaged in such planning. What I'm afraid of is that many banks believe that the credit card is going to be around for a long time in its present form. They think the fog bank will clear and it will be smooth sailing from then on. Let me throw out a few thoughts on why the fog bank will get a lot thicker before it lifts.

- The era of the SST, which will bring with it the SST standard for air travel and T & E cards. Can banks afford not to adopt the standard?
- The march toward combined statements and line-of-credit services tied to checking accounts. Where does the credit card fit into the picture?
- The natural aspiration of the less affluent to own a credit card, just as it says on TV. If credit cards continue to become of greater significance to the consumer credit systems, can roughly one-third of the consumer public be disqualified from participating for long?
- The large number of customers of financial institutions which are not a part of the fund transfer mechanism. Will they convert to commercial bank customers out of sheer need?
- The relationship between banking and retailing. Is the credit card battle nearly won by banks or is it too early to tell?
- The broader implications of welfare payments – expected to surge from 11 to 25 million people within the next five-year period. Will banking provide the transfer mechanism and will the credit card, or an identification card, be involved?
- The primary question. Will a single number system develop and with what consequences for society?

Of necessity, this is an incomplete list. I haven't touched on such things as authorization, national interchanges, fraud protection, verification technology, nor a raft of other factors to be considered. My suggestion is that you consider the credit card system, which now exists, to be temporary, and that you set a curfew date, say in late 1970, beyond which you want some of these hobgoblins off the street. If new directions are to be taken, why should you be the last to find out? If some pioneering is required, perhaps some of it should be done here in the Midwest. If the present system is the ultimate, then I would suggest another good hard look at the balance sheet.

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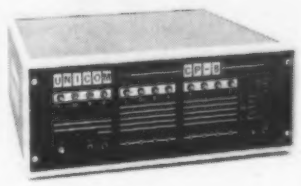
Front End Minicomputer Without Core Costs $1,800 in Smallest Configuration

FAIRFIELD, N.J. – A minicomputer, billed as either a front-end processor or as a general-purpose computer has been announced by Unicom, Inc.

The basic CP-8A consists of a 1.5 μsec cycle processor, 512 bytes of read-only memory, 4 scratchpad registers, and a set of 40 byte-oriented instructions. This configuration costs $1,800. For use as a general-purpose machine, the price goes up, as memory is added.

The company says that "a powerful set of I/O instructions is capable of addressing up to 1,024 external devices." There are also CP-8B and -8C models, with 47 instructions, up to 16 scratchpad registers, 1-4K bytes of ROM, 1-32K bytes of core, and priority interrupts.

One level higher is the D model, which adds magnetic tape cassettes. This model, with



Unicom CP-8

1,000,000 bytes of tape storage and 1K of core is priced "under $5,000."

Delivery of the A model is scheduled to start next February, with the other models scheduled for March delivery.

Unicom Inc. is located at 1275 Bloomfield Ave. here.

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Photocomp CRT Has Serif Input/Output

BETHEL, Conn. – A graphics display system which can make use of the full 128-character ASCII set to produce upper/lower case serif type fonts has been developed by Computer Optics Inc.

Designated the CO:70, the system can display up to 3,000 characters on its screen, and can also act as input in a photocomposition system. It has full edit-

Computer Optics CO:70

ing capability, according to the manufacturer.

The unit has so far been interfaced to the IBM 360 and 1130, and the DEC PDP-8. The company plans to add the RCA Spectra 70/45 and 46, and the CDC 3300 to the list.

Options include magnetic or paper tape I/O, push button data generation, operator or computer-controlled hard copy, line drawing graphics, and color CRT output.

Prices of the unit vary from $131 per month to $262, depending on options. The company says that initial deliveries will start in early 1970, with full production shipments in June or July.

Computer Optics Inc. is located at Berkshire Industrial Park here.

Audio Response for 1130 Called Less Expensive

CHICAGO – A low-cost computer attachment, programmed to respond to questions with a human voice, is said to offer IBM 1130 users immediate access to their computers from Touch-Tone telephones in the United States. Technical Computer Services Corp. is offering the unit.

Called the Datatrol CI-114, the unit attaches directly to an IBM 1130 computer. It has a basic vocabulary of 31 words, which can be increased to 62 or 124 words upon demand.

A client calls in, establishes his identity and enters his data using the Touch-Tone buttons. The computer responds with a human voice, sending information, requesting further data or confirming data received. It is keyed to give only authorized users access to restricted information.

The manufacturer states that "this unit was designed specifically to attach to minicomputers, providing a service once available only to very big computer users. It used to cost approximately $1200 a month. TCSC clients can add Voice-Response to their computer capabilities for under $300 a month." This is for the 31-word system, which sells for under $10,000. Delivery is 30-60 days.

Technical Computer Services Corp. is located at Edens East, 6200 North Hiawatha Avenue.

Off-line Graphics System Held Faster and Cheaper

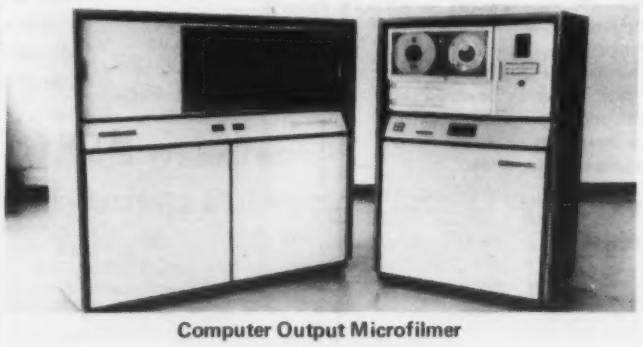
ANAHEIM, Calif. – The CalComp graphics output system 900/1670 is a high-speed, high resolution offline Com (Computer Output Microfilmer) system that draws at the rate of 500,000 increment/sec and prints at a rate of 5,000 line/min, depending upon the size and variation of software generated type fonts. Any type font or variation can be used – in any language, according to the company.

Options include a form projector with 16 program selectable forms and a high-speed character generator which is said to increase the average printing rate by 100%. Cameras are available for 16mm or 35mm sprocketed or unsprocketed microfilm. A 105mm microfiche camera also is offered as optional equipment.

The system is composed of a Model 900 controller, a stored program device, a Model 937 magnetic tape unit, providing up to 30,000 byte/sec input to the controller, and a Model 1670 microfilm printer/plotter, featuring a programmable raster of 16,384 by 16,384 positions, the highest plot resolution available.

The base price of $130,932 is about one-third less than comparable systems, according to CalComp. Initial deliveries are scheduled for the second quarter of 1970.

California Computer Products Inc. is located at 305 N. Muller St. here.



Computer Output Microfilmer

Device Converts Card Punches to Card Verifiers

FORT LAUDERDALE, Fla. – A punched card verifier-adapter converts any IBM 024, 026, or 029 card punch to a card verifier, making punching and verifying operations immediately interchangeable on the same machine with a turn of an operator-controlled switch, according to Data Research Corp., the manufacturer.

The single unit punch-verifier allows operators to either punch or verify for immediate correction of errors. The unit eliminates the transferring of cards from one machine to another, the company states.

Installation of the DRC verifier-adapter is available at the user's facilities. The unit leases for $28/month through Western Union Computer Utilities Corp. Installation, according to the firm, does not void or alter IBM service or lease contracts.

Data Research Corp. is located at 2601 East Oakland Park Boulevard.

1969 EDP Developments in Retrospect

Unbundling, Antitrust Suits Headed 1969 News

CW's Top 10 1969 News Stories

Here are the top 10 news stories of 1969, as selected by *Computerworld*'s editors, and as chosen on the basis of their importance to the computer user.

The top story of the century, of course, was the moon mission, which would have been impossible without the aid of computers.

However, the Apollo missions are not included in the list of the top news stories for the computer user, since the impact of the missions is on mankind in general, and has little if any effect on the end user himself.

1. Separate pricing; user and industry reaction
2. Antitrust suits against IBM
3. Software patents
4. Independent network to compete with Bell System
5. New industry model: IBM System/3
6. Good, cheap system: Viatron System/21
7. Input technology advances
8. Joint Conferences outstrip projections
9. Attacks on computer centers
10. Misuse of computers

By Edward J. Bride
and
Peter F. Carr
CW Staff Writers

The pulse of progress is beating strongly as a turbulent decade comes to a close.

The technological community's rampant progress rivaled sociological developments in the years of second and third generation computers, the threshold of a new era for programmers, competition for corporate giants like IBM and the Bell System, and concern over the direction which change has taken.

The year just ended saw new concepts, new products, and new concern over old problems.

As might be expected of an industry giant so far ahead of competition, IBM headed the list of the year's most dynamic and significant user-oriented news stories.

IBM kept its 1968 promise and announced a significant change in pricing policy, separating hardware from software and services.

This long-awaited "unbundling" had been expected to cause a significant reduction in both purchased and leased hardware costs, but only a 3% drop resulted. Some people estimated that the end result of separate pricing would be a 15% to 25% increase in costs.

IBM's unbundling, plus indications from the U.S. Patent Office that some sort of protection will be afforded computer programs should be a boon to the software industry.

Breach of Contract Charged

User reaction to unbundling varied, and one user went so far as to file a $5 billion breach-of-contract suit against IBM. Motor Replacement Co., of Phoenix, filed its class action, charging that IBM was forcing it and other users of IBM equipment to pay for services which had been offered "for the life of the machine."

Greyhound Computer Corp. also filed suit, charging unfair competition and breach of contract. Greyhound purchases IBM equipment and then leases it out at a fixed rate below IBM rental rates.

IBM, of course, denied that either suit had merit.

Industry reaction was also varied. Some large manufacturers followed with their own unbundling announcements, while others decided to raise prices and stay "bundled." Still others adopted a "wait and see" attitude before committing themselves to a permanent policy.

Control Data unbundled, Honeywell did not, but announced a slight rental increase.

NCR will pro-rate free service on the amount of monthly rental. Burroughs will make selected software proprietary.

General Electric raised prices and stayed bundled. Univac and RCA announced "no changes."

Five File Antitrust Suits

Lawyers at IBM were very busy people last year. Aside from the two breach-of-contract suits, the large corporation was called monopolistic by the Justice Department and four companies.

The Justice Department said that IBM had hindered the development of software industries by its "bundled" policy.

The four companies who attempted to collect damages as a result of this single pricing were Applied Data Research, Control Data, Programmatics, and Data Processing Financial and General.

The latter antitrust suits all cited one or both of the 1935 or 1956 consent decrees signed by IBM. The decrees prohibit tie-in sales like single hardware-software-service contracts, according to ADR.

The four suits were consolidated in U.S. District Court in St. Paul, where Federal Judge Philip Neville ordered all references to the consent decrees stricken.

IBM said that the apparent effect of striking the references would be the removal of $4 billion from the total of $10 billion being sought.

Judge Neville denied a motion by IBM to have certain other charges stricken from ADR's complaint.

The next court hearing is set for January 12.

Issues of 'Concern,' Fear of Misuse Seen in Attacks on Computer Centers

Two of the year's top 10 stories can be combined under the classification "issues."

Attacks on computer centers were seen as protests against certain applications, mostly military.

In some cases, the incapacitating of a computer center was used to cripple the orderly process by which a college or business was operating.

Closely aligned with the attacks on computer centers is the misuse of computers.

Concern over misuse is directed more to errors, wrongful use of data, or unauthorized access to data, rather than to a particular undesirable application.

Unrest and dissatisfaction of the college generation was reflected in several incidents of attacks on or capture of computer centers.

The erasing of a thousand tapes at a Dow Chemical computer center was evidence of concern over militarization of computers.

What really loomed, however, was the issue itself, not the individual attacks or occupations. Society has become concerned at the direction it took in the 60s, and wishes to approach the 70s in an orderly but perhaps not so rapid pace.

The user is becoming concerned, too. Not only because he is an integral part of society, but also because his livelihood is extremely vulnerable to the whims of dissidents.

Many times the occupation of a computer center was used as a tool for militants to wring promises of policy changes from college administration officials.

Adult Dissidents Also Speak

Nor were college "kids" the only dissidents. The Joint Computer Conferences were arenas for the airing of problems, but solutions were conspicuous by their absence.

Some people merely suggested that the rapid rate of technological advancement should be slowed so that society can catch up. Others merely projected continued gloom for the computer community.

The fact remains that advances were made within the industry, and computers themselves helped hospitals, communities, and businesses. The percentage of militant dissidents is probably no higher in the computer society than it is in any other industry.

But make no mistake about it. The unrest is present, and militancy can do much harm to the computer user.

Computer Errors, Misuse

Another "issue" which drew much concern in 1969 was output errors and the misuse of computers.

There were several instances of both of these drawbacks, although no single occurrence would rate the problem as one of the year's top stories.

Erroneous computerized dunning is probably one of the most common problems that reaches the non-users, as well as those within the industry.

It became apparent last year that, in some cases, a notice of nonpayment could get to a recipient without ever being touched by human hands, except for putting the envelope in a sealing machine.

Computers were given "names" by some collection agencies. Dunning notices would be "signed," but the signature only denoted what type of account was being billed.

Computers also helped solve this type of problem, however, as seen in the case of the theft of several hundred blank Diners Club cards. A computer analyzed the spending habits of regular card holders, and the theft was eventually solved.

Concern continues to rise in the issue of the National Data Bank. Some observers see the data bank as inevitable, and are just as convinced that it will be misused.

Security is a great problem; this fact is admitted by all proponents of the data bank, although proposed solutions are few.

OCR Unit Advanced Input Technology

A development representing progress in the field of input technology was made in September with the announcement of an optical character reader capable of learning new characters or entire alphabets on-line.

The machine is presently being used in the service division of Compuscan Inc. A second system, also to be used in the company's service division, is expected to be in operation by the end of January.

The machine's ability to accept any type of input or style of text, its ability to read several fonts at the same time, its ability to accept any special symbols, its ability to read unformatted material without any special programming, and its ability to scan graphical documents is a breakthrough in solving the problem of getting large amounts of past data into data banks. In some cases typewritten material going back to 1915 has been read and entered.

Although the price, $900,000, is prohibitive in many cases, the company is planning on making specialized versions of the optical character reader by cutting out some part of the present machine.

This would probably reduce the price of the machine, according to a company spokesman. No date, however, has been set for production of the smaller models.

Need for Program Protection Cited; Users Look to Courts for Direction

WASHINGTON, D.C. – Software protection became a much-discussed topic last year, but solution of this problem is not at hand.

Most users replying to a Patent Office request for opinions favored strong forms of protection for computer programs. However, ideas ranged from patents to copyrights to internal controls.

Trade secrets were mentioned as an alternative to protection, a development which would hamper emerging software houses and the computer industry itself, according to many respondents.

The Court of Customs and Patent Appeals upheld a decision in the Pater & Wei case, saying that a programmed general-purpose computer becomes a special-purpose computer, which "along with the process by which it operates, may be patented. . . ."

The decision, along with IBM's unbundling, is expected to be a boon to the software industry. Both events should have some benefit for the user, since he will now know what he is paying for, and be able to demand quality.

Price increases, however, are inevitable.

Despite the Prater & Wei decision being, as one observer put it, "a Magna Carta for the software companies," the ACM predicted that IBM would dominate 90% of the software industry.

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1969 EDP Developments in Retrospect

Viatron, IBM Establish New Industry Concepts

The small user will no doubt benefit from the introduction during the year of a number of innovations designed to reduce the price of hardware and put a wider choice of equipment on the small computer market.

Viatron System 21

Deliveries of Viatron's System 21 began in October in the Boston and New York areas. Designed to crack open the market for EDP equipment with low-priced, mass-produced hardware, the System 21 terminals rent for about $40/month. The company, however, was reluctant to release the number of installations it slated to make by the end of the year.

To complement the terminals, the company announced the development of two general purpose computers scheduled to be delivered in mid-1970.

The addition of this equipment will enable small users to interconnect multiple System 21 terminals (up to 24) with a central processor at a remote site for batch processing, according to the company.

The smaller of the new models, the 2140, is a 4K, 16-bit word memory, with 8 I/O channels to support the System 21 terminals, and will rent for $99/month.

The 2150 will rent for $199/month and has an 8K, 16-bit word memory, hardware multiply/divide, and 24 I/O channels.

Viatron plans to create a network of service depots to provide 24-hour emergency service for on-site repair or replacement of units, with normal maintenance based on replacement rather than repair.

This service will be a part of a network of dealers who will rent, sell, service, and provide systems support for Viatron products.

IBM System/3

The announcement in July of the IBM System/3 marked a breakthrough in the development of a computer designed for the small business user.

The System/3 contains a number of major innovations including:

- A small 96-column punched card, 16 columns greater than the familiar 80-column card;
- Disk storage ranging from 2.45- to 9.80-million characters;
- RPG II – an expanded version of a popular programming language; and
- Monolithic Systems Technology (MST).

Despite delivery delays [CW, Dec. 10], users of unit-record equipment are optimistic about the System/3 as a solution to the dilemma of taking advantage of the latest technology while keeping costs down.

CW has spoken with many of these small users and found that many feel that they can make the transition from their present equipment and become computer installations by installing the System/3.

Reactions from competitors range from a position that the System/3 will have no effect on the market to one of happiness that a new market has been opened up.

NCR maintained that no impact had been made on their Century line or any of their other products. On the other hand, GE, whose Model 55 competes directly with the System/3, felt that the publicity generated by the System/3 is bound to have a beneficial result for all of the manufacturers of small systems.

Families: a Year for Expansion

By Frank Piasta
CW Staff Writer

With the exception of the IBM System/3, the most significant announcements of computing systems by major manufacturers were in the area of extensions to existing equipment.

The IBM 360/195 is now the largest model of the 360 line, dropping the Model 95 to second place. Univac added significant capability to the low end of its 9000 Series with the introduction of the 9200 II and 9300 II models. The 1106 from the same manufacturer expands the 1108 into a family of systems.

RCA, with the Spectra 70/60 and the time-sharing 70/61, is entering the giant computer market for the first time.

The GE Model 120 marks a new top to the familiar 100 family of computers. The Model 655, also by GE, and the newest member of the 600 Series, is the fastest GE processor yet.

IBM

Of the eight major announcements of general purpose computers those of IBM generated the greatest interest.

The IBM System/3 will probably have a greater impact on the data processing user than any other system already announced. Since July, an estimated 3,000 customers have lined up for delivery of this first system from IBM that may be able to replace the small tab user's equipment.

Just ten years ago, IBM brought out another system, the 1401, that was not considered a true computer by some effete observers. Computer or not, over 9,000 users made it the most popular data processing system to that date. The System/3 customers are just as eager to buy, and even more numerous.

The impact of the System/3 will extend beyond the limits of its own installations. Unless first indications are completely misleading, the effect of the 96-column card will be felt throughout the industry. Competitors will certainly be unable to ignore a market that promises to be of such large size.

Accessory suppliers have already introduced card-handling devices to make use of the new System/3 card format – the first major change in tabulating card design.

If the System/3 promises to be the most popular of the newly announced systems, the IBM 195 is the most interesting. A giant among giants, the 195 constitutes a serious threat to the CDC 7600 and to CDC's plans for holding the large-scale scientific market.

IBM states that most programs for other large 360s can be run on the 195 without modifications. The exceptions include time-dependent programs, user-modified channel command words, and some user programs.

Almost all peripheral equipment currently available with IBM's largest computers will be compatible with the 195. The large system departs from the 90 Series in that it is available on a lease basis. The older models are available on a purchase-only plan. Lease prices for the 195 will range from $165,000 to $300,000 per month.

Univac

During 1969 Univac extended two existing lines with three products: the 9200 II, the 9300 II, and the 1106.

The 9200 II is basically the same processor as the card-oriented 9200, the first member of the 9000 Series. The 9200 II differs from the 9200 in that it has available some of the peripheral equipment up to now restricted to the 9400 in the 9000 family, including disk drives, tape units, and high-speed printers.

A typical magnetic tape 9200 II with 24K of plated-wire memory, 600 card/min card reader, 200 card/min card punch, 100 line/min line printer, in addition to the integrated 250 line/min printer and three tape units, will rent for $4,565 per month, including maintenance, and will sell for $159,935.

Announced along with the 9200 II was the 9300 II. The multiplexer channel, optional on the 9300, is standard as is a 333K byte/sec selector channel. Both the high-speed printers and 8411 disk system are available on the 9300 II.

Rental charges for a typical magnetic tape 9300 II will be $5,775 per month including maintenance. The system will sell for $208,205.

The 1106 was Univac's third announcement of the year. Similar in most respects to the 1108, it differs mainly in that it has no multiprocessing capabilities. Priced near the IBM 360/50, the 1106 is claimed by Univac to have performance at the 360/65 level.

A typical 1106 configuration will rent for $37,000 per month, $15,000 less than a similar 1108. Univac 1108 users that want to have an 1108-and-a-half will find the 1106 a solution to their problems, according to Univac.

RCA

RCA added two systems to its Spectra 70 line, the 70/60 and the 70/61. The Model 70/60, a larger and faster version of the 70/45, is said by RCA to be twice as fast as the 360/50, with which it is competitive in price.

The 70/60 is available in memory sizes ranging from 131K to 1,049K bytes, becoming the first RCA computer in the mega-byte class. Main memory is core, with a cycle time of 1 μsec. The 100 nanosec scratch-pad memory has a capacity of 1,283 32-bit words.

The Spectra 70/61, basically a time-sharing version of the 70/60, bears much the same resemblance to the 70/60 as the 70/46 does to the 70/45. It is equipped with a magnetic drum that extends virtual memory capacity of the system to 2 million bytes, together with a read-only memory for use in paging.

GE

The two GE announcements were also expansions of existing lines – the 120 and the 655.

The 120, the newest addition to the 100 Series, features 360-compatible RPG. Priced at $2,980, a typical magnetic tape configuration would include 12K of 4 μsec core memory, three 15K byte/sec tape units, a 400 card/min card reader and 300 line/min printer. The disk system with two DSU-160 disk drives and the same central processor reader and printer will rent for $3310.

The 655, priced to compete with the top end of IBM's line, is the fastest GE system to date. Compared to the 635, the 655 is twice as fast, with a cycle time of 0.5 μsec, and is available in the same range of memory sizes, 32K to 256K words. Other hardware is almost identical to that of the older model. All software developed for the 635 will be used with the 655. A minimum configuration of the 655 will carry a rental charge of $80,000 per month.

Technological Advancement Reflected in Conferences

MONTVALE, N.J. – The Joint Computer Conferences continued to grow at a rampant rate in 1969, reflecting the increases in computer technology and consumer interest.

Although final estimates are still not available for the Fall conference in Las Vegas, it is anticipated that the combined total for both conferences will pass 65,000. Spring attendance was 37,000.

New records were set in just about every category, according to the American Federation of Information Processing Societies (Afips), conference sponsors.

Visitors, new and total exhibitors, exhibit space, and new products all set records at either the Boston or Las Vegas meeting.

Transportation, lodging, and communications problems continue to plague the conferences, and no solution is imminent in this area.

Afips is anticipating that industry growth will be reflected in future shows, and rough predictions for the 1970 SJCC in Atlantic City range from 40,000 to 80,000. About half-way in between is probably close enough for speculation.

Afips has made available the proceedings of all 35 conferences, reproduced on either microfilm or microfiche, depending on the year. Sets are available in various compilations through Afips Press headquarters here.

MCI Has Data Competition for Bell

A national microwave communications network designed to compete directly with the Bell Telephone Network in transmitting computer data was announced in September by Microwave Communications Inc. (MCI).

In making the announcement, John D. Goeken, president of MCI, said that permission had been obtained from the FCC to set up the first link in the system, from St. Louis to Chicago, and construction had already begun. This link should be in service by mid-1970, he said.

Fifteen other links will serve to cover the rest of the country, Goeken said. Permission has been requested from the FCC for five of these, while the others are well along in the planning stages, he stated.

The microwave system will provide an alternative to the present Bell Telephone Network for transmitting computer data and radio and television transmission. Assuming FCC approval, the system should be fully operable within three to four years, Goeken said.

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1969 EDP Developments in Retrospect

Minis and Peripherals Dominate Small Hardware News

By A.B. Williams
CW Staff Writer

During 1969, various segments of the small processor and peripherals market dominated the news. Among these were the minicomputers, mass memory storage devices, keyed entry data units, and computer output microfilm devices.

A year ago, minicomputers were defined in terms of processor (usually a 16-bit word job using a binary scheme of arithmetic and addressing), and price (the first under-$10,000 mini was introduced in late 1968).

Minis, generally, are supplied by the manufacturers with no peripherals and minimal software – often just a Fortran compiler and an assembler. A few manufacturers offer more software or peripherals, but charge more money for the product.

The market has grown from the original four or five manufacturers (still dominated by Digital Equipment Corp.) to include a much larger number. Prices have been forced down. During 1969, two of the original suppliers lowered prices.

Mass Memory

For mass disk memory products IBM compatibility is the obvious goal. During 1969, the trend spread from the major mainframe manufacturers making physically compatible drives through established peripheral companies, into new firms established to take advantage of IBM's price and performance umbrellas.

To illustrate the proliferation, it is now possible to interface an IBM-compatible disk drive to a non-IBM computer with a non-IBM control unit, and have all three manufactured by different companies.

While the IBM 2311 disk drive was the original target for competitive equipment (DOS being as popular as it is), the 2314 mass disk memory has had its share of action. One company has zeroed in on the very slow-access 2310 disk drive used on IBM's big-selling 1130 computer.

Originally, competition was at the disk pack level. In this stage, physical compatibility, price, and slow 2311 deliveries were the major objectives. During 1969, a number of organizations carried the competition through the level of the complete drive into controllers, thus enabling users to contract for units which interface directly with I/O channels.

This last phase of development is very encouraging. In the past, users of IBM (or other manufacturers' equipment) have been in a weak position when trying to get maintenance on multivendor systems. Now that the disk can be bought with full controls, these problems should be minimized.

Competition is available both in price and in performance. The obvious leader in the latter area looks like the Iomec Inc. replacement for the 2310, which has reduced average seek (head travel) time from 520 msec to 70 msec. Another manufacturer has approximately halved the seek time of the 2314, which should prove to be a major benefit to active users of the IBM unit.

Key Entry

Keyed entry data units have proliferated more in numbers of suppliers than in types of units. The reason is obvious – the number of non-card input devices that lend themselves to the keyed entry treatment is itself limited.

The major changes this past year have been in the applications geared to high-volume users. Key-to-disk (whether as intermediate or final precomputer form) has come into its own.

Disk is more easily sectored into different areas for different operators; pooling is thus possible in separate segments for different types of input, if this flexibility is desired.

This phases into measurement of operator productivity and supervision, which is far easier to gauge as identification of operators' work gets easier.

COM

Computer output microfilm has been a long time coming, judging from the number of users grinding out huge volumes of library-type information by conventional photographic methods. These users have, in the past, been forced to convert to microfilm from the printed output itself, rather than being able to go directly from print image computer output tape, off-line, to microfilm storage.

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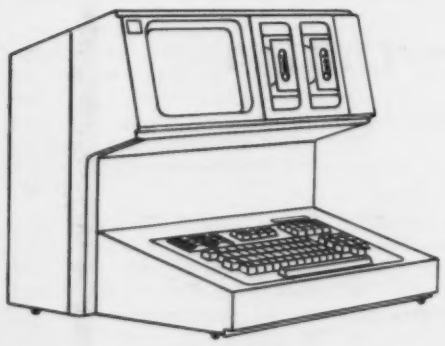

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Year-End Review

IBM Unbundling Biggest Software Event In 1969

By Peter L. Briggs
CW Software Editor

IBM's unbundling announcement certainly created the biggest furor in the software/user industry. Along with this announcement came a tremendous growth in software suppliers and announced packages.

Users have changed their thinking about the proper uses for outside software, and are still feeling their way through the new unbundled pricing from IBM.

All these factors, and several others including the IRS ruling on software capitalization, have made last year the most confused, and complicated, since the inception of the software industry.

Unbundling Implications

Unbundling has accomplished several things. The most noticeable is that IBM has set a price on competitively developed software and application packages. Unbundling has also made most users much more conscious of the costs of software.

It was pointed out [CW, July 2] that user's expenses for data processing could increase by as much as 35%, should they choose to obtain all their software from IBM. This has caused most users to consider outside software more seriously.

The software industry, at first overjoyed by IBM's announcement, is now beginning to feel the pinch. IBM's sales force is a strong competitor to anyone, and IBM's recent software product announcements have shaken the industry with their low prices.

Even the service industry is hurting. IBM's own Service Bureau Corp. salesman have complained since the announcement of the Interactive Terminal Facility and the OS Time-Sharing Option. It seems that the Data Processing Division is making it very hard for anyone to compete with what IBM makes available for in-house users at a very low price.

Tied in to the unbundling announcement have been many reactions to the Internal Revenue ruling regarding the capitalization of software expenditures. If software is leased, as most of IBM's is, then it can be expensed.

If software is purchased, as most outside software is, then it must be capitalized. This presents an additional tax burden to the user who tries to make optimum use of his EDP budget through outside acquisition of software.

Independent Software

The independent software companies have introduced a positive deluge of products during the year. Operating systems, application programs, programming aids, and languages represent the major areas where new packages are now available.

Several programmer aids, particularly in the area of improving the utilization of the machine and the operating system, were introduced.

Various packages, mostly for the 360, helped the programmer to bypass errors, trace the source of errors, and document his programs more quickly and more accurately.

Techniques such as decision tables, automated flow charting, and on-line debugging have received much attention.

The availability of packages through time-sharing services has increased substantially. This is the current technique for letting the user know that "We're the best!"

The independent suppliers have also begun to learn one of the major lessons about supplying software – you have to be able to both sell and support it.

Many smaller companies have run into serious trouble because they could not support their customers, and their customers complained.

This word-of-mouth business is really the only means of self-protection available to the user. He can either tell CW about his problems, or tell all his acquaintances about the problems he ran into.

With the proliferation of software offerings, it becomes harder and harder to evaluate the reliability of any given company.

User Thinking

Though few (about 1,300) users are currently using outside software, many users have indicated that they plan to do so in the near future.

It was felt, by many of the users contacted, that the manpower shortage and the turnover rate were making it nearly impossible to retain the highly trained people necessary to develop good systems software or large applications in-house.

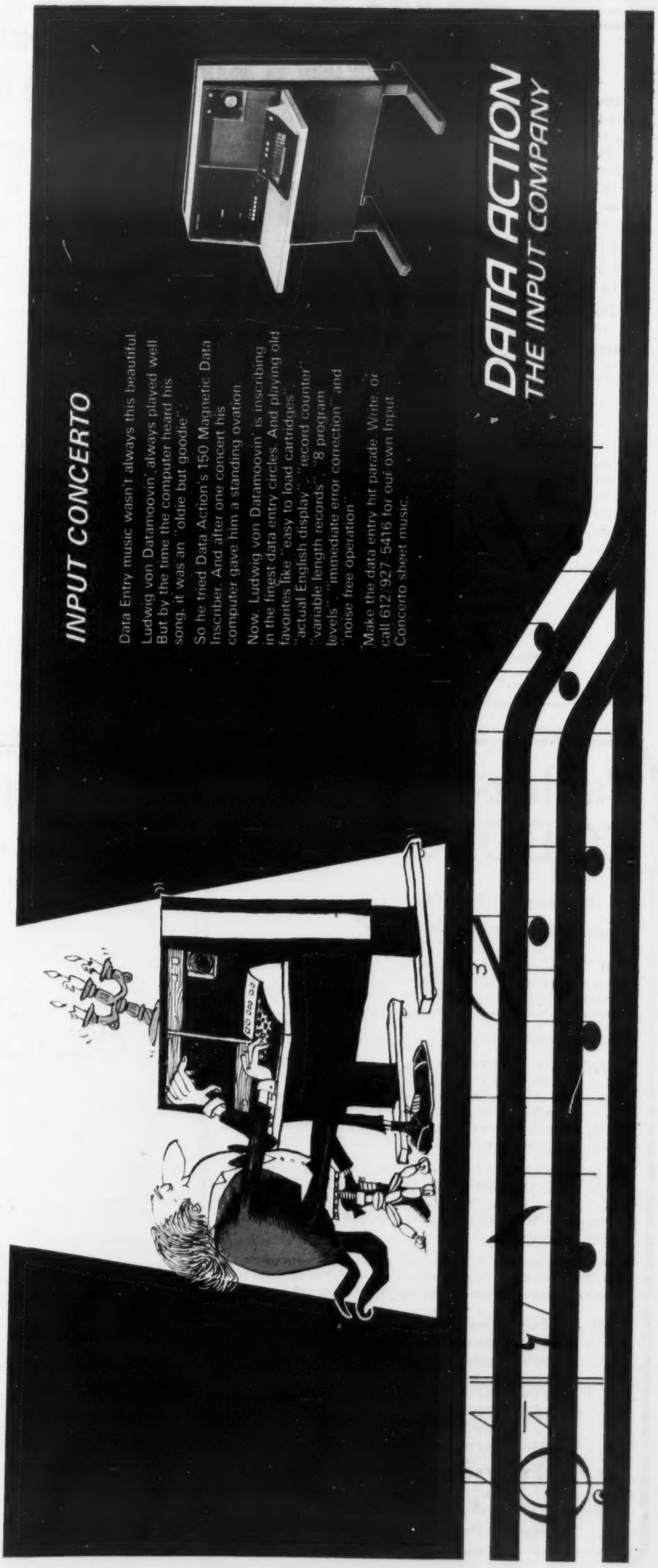
This change will certainly be a boon to the software market, long suffering from lack of attention. It does not appear, however, that there are too many new broad-based packages that can still be announced.

Over 3,000 packages are now competing for the user's dollars. Many of these are for payroll, accounting system, or inventory system use. Perhaps 80 different payroll packages are available, all with essentially similar features and vastly different scales of implementation effectiveness.

Services have sprung up, designed to help users evaluate both outside software, and the feasibility of developing packages in-house.

The biggest problem in this area is the age of the information available.

A given company could be excellent today, and be worthless next week due to a major staff turnover (this might be only one person, in some companies).



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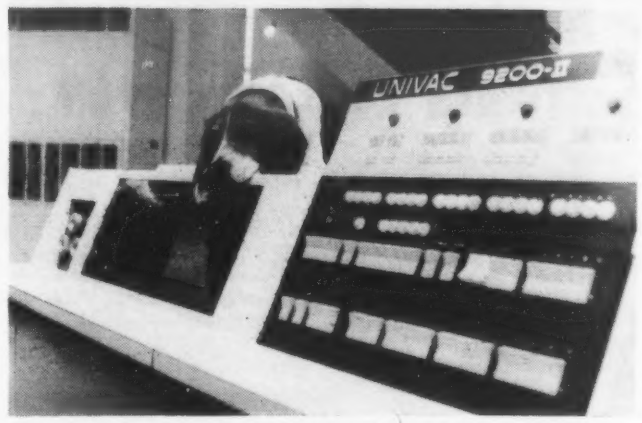
Development, Distribution of Dog Data Designed to Diminish Dognapping Danger

GILLETTE, N.J. – Watch that dog of yours, someone may be after it.

An estimated two million dogs disappeared last year. Many were victims of a nationwide ring of dognappers that peddles pooches to laboratories and hospitals for use in research.

"We believe that about 50% of the missing dogs were taken by dognappers," says Sal La Manna, head of the National Pet Registration Center in Gillette. His organization tattoos dogs painlessly and registers their identification numbers on a computer.

It also keeps an extensive computerized information system on the traffic in lost and stolen dogs.



Information on a dog's identity is fed into this Univac 9200 in an effort to discourage dognapping.

A typical dognapper, La Manna explains, will furtively pick up a dog, remove his collar and tag, throw him in the trunk of a car, and drive off. Later he will take the dog, along with other hapless pooches, to a secret out-of-state auction, where dealers will purchase other hauls for small sums, obtaining bills of sale to legitimize their ownership.

Far from their owners, the same dogs will later be sold to laboratories for a going rate of about $40 apiece.

To give a dog a permanent identity, La Manna's organization marks it with the owner's Social Security number. This number, and the owner's name and address, goes into the memory of a Univac 9200-II computer at the Capitol Data Processing Corp., a computer service firm in Montclair, N.J. The computer can instantly furnish ownership information when it is needed.

La Manna has registered about 10,000 dogs since the computerized system was begun in 1968. Each dog receives a tag showing it has been tattooed. Its owner is given decals, for display at his home, telling potential dognappers that the animal has been marked with a permanent identification number.

La Manna has notified the 1,500 laboratories, plus state attorney generals, police departments, dog pounds, and humane societies, of the dog registration system.

About 13% of the U.S. population owns dogs, La Manna says, and every day the papers continue to carry the news that some have disappeared, perhaps on the long sad journey which ends in the laboratory.

Criminals, Stolen Property Registered At National Crime Information Center

WASHINGTON, D.C. – The long arm of the law can now reach farther, and faster, than ever before. In seconds, from almost anywhere within the U.S., police can find out important information about stolen property or wanted criminals and make an arrest on the spot.

This is accomplished with the assistance of an IBM 360/150 that the FBI has installed in its two-year-old National Crime Information Center (NCIC) here.

The system is hooked up with state and city police computers in every state except Alaska. This involves over 1,800 local police departments through 90 regional control terminals.

Transmits Police Data

Data from each of these stations is fed into the NCIC memory bank at the rate of 40,000 pieces each day. Here it is processed and transmitted to any other requesting police department throughout the country.

Each police department, however, is responsible for entering crime statistics, maintaining them, updating them, and clearing them with the central processor when the crime has been solved or the criminal apprehended.

More than five million bits of information are maintained in NCIC's IBM 2314 disk files. Since local police handle their own minor criminal cases, details in the files are essentially of an interstate nature. Thus only information on those who have committed serious crimes or on property worth more than $500 is entered on the computer.

Details of an individual include his sex, height, weight, date of birth, Social Security number and armed forces serial number. Files on property include data on automobiles, boats, guns, securities, and other stolen articles.

NCIC's purpose is a more comprehensive and faster exchange of police information. The system enables a policeman to query the memory bank and receive an answer within 30 seconds when approaching a suspect or stopping a speeding car.

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- MANAGEMENT REPORTS PROVIDE TIME AND COST OF TEST TIME BY PROGRAM, PROJECT AND PROGRAMMER.
- DAILY LOG OF PROGRAM EXECUTIONS BY PARTITION PROVIDES METHOD OF OPTIMIZING THE SCHEDULING OF COMPUTER OPERATIONS.
- MAXIMUM OF 500 BYTES REQUIRED IN DOS SUPERVISOR.
- INSTALLED IN MORE THAN 50 COMPANIES IN 1969.

PRESENTATION SCHEDULE

JANUARY

PHILADELPHIA – MONDAY, JAN. 19
BOSTON – MONDAY, JAN. 26

FEBRUARY

WASHINGTON, D. C. – MONDAY, FEB. 2
ATLANTA – MONDAY, FEB. 16
NEW ORLEANS – WEDNESDAY, FEB. 18
MIAMI – THURSDAY, FEB. 19

MARCH

CLEVELAND – MONDAY, MARCH 9
DETROIT – TUESDAY, MARCH 10
ST. LOUIS – THURSDAY, MARCH 12
HOUSTON – FRIDAY, MARCH 13

APRIL

LOS ANGELES – MONDAY, APR. 13
SAN FRANCISCO – WEDNESDAY, APR. 15
SEATTLE – FRIDAY, APR. 17

MAY

PITTSBURGH – MONDAY, MAY 4
INDIANAPOLIS – TUESDAY, MAY 5
KANSAS CITY – THURSDAY, MAY 7
MINNEAPOLIS – FRIDAY, MAY 8
TULSA – MONDAY, MAY 25
DALLAS – WEDNESDAY, MAY 27
PHOENIX – THURSDAY, MAY 28

JUNE

PORTLAND – MONDAY, JUNE 15
SALT LAKE CITY – WEDNESDAY, JUNE 17
DENVER – FRIDAY, JUNE 19

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'ESP' Package Claimed Accurate Within 10%

Two new packages, a program for estimating source programs (ESP), and a project control system for program development (PAC), are being introduced by two companies to assist users in the operation of their DP facilities.

ESP

The ESP program estimates the time necessary for each stage of program development, including coding, testing, and documentation, according to Computer Resources Corp., the developer.

Three levels of programmer experience and five levels of program complexity are incorporated into the analysis, permitting almost any combination of circumstances and parameters for analysis, according to the company.

Various rates, ranging from $5 to $15 an hour are used to estimate development costs.

The package, selling for $400, includes documentation and operating instructions.

The unit of measure used is one source statement. ESP, the company says, "has proven accurate to within 10% on the number of source program statements required on all programs tested to date." If the statement/man-hr rate is known for a given installation, simple alterations will permit the program to make use of these rates. Otherwise, built-in rates, based on nationally collected data, will be used, the company says.

ESP operates on S/360 under either OS or DOS, and is currently running on systems ranging from the Model 30 under DOS through the Model 65 under OS/MVT-ASP (attached support processor.)

Current users include Braniff International, Oak Cliff Bank and Trust Co. of Dallas, and the Republic National Bank of Dallas, according to the company. Computer Resources Corp. is located at the Meadows Bldg., Dallas, Texas.

Project Control

Project Analysis and Control (PAC) sells for $7,500 and runs on a 32K or larger computer, according to International Systems Inc. The system stores and maintains information on all projects and sections of projects currently underway.

Information to assist in the time and cost analysis of project completion is provided through nine reports. Specific reports include departmental loading, program history, programmer's efficiency reports, and total project time and cost.

Periodic progress reports are produced, as well as time analysis reports for management.

International Systems Inc. is located at the Continental Arms, King of Prussia, Pa.

SDC Offers $350/Mo 360 Data Management System

SANTA MONICA, Calif. – A $350, S/360-oriented interactive data management system, the first in a series of data management systems from Systems Development Corp., was announced recently.

The package runs on any 360/30 or larger computer with at least 32K, and operates under DOS, the company says. It can use either 2311 or 2314 disk storage devices, and uses completely 360-compatible data-coding and files.

DS/1 can handle many different types of files, including personnel files, financial records, inventory data, municipal records, real estate listings, and medical records, the company says.

The retrieval and command language employs standard English phrases, and all responses are also in English. No knowledge of computer programming is needed to retrieve or reference data stored under DS/1, the company says.

Information including record-selected counts, printouts of selected records, and printing of selected information within selected records can be produced with the system.

On-line update and error validation are fully supported, the company says. The company's offices are located here at 2500 Colorado Ave.

Time-Share Decision Application Packages Operate on GE Mark II

KING OF PRUSSIA, Pa. – A series of management decision time-sharing applications packages, is available from Time-Sharing Enterprises Inc.

Along with the applications packages, the company provides training and documentation, according to Alan G. Hammersmith, company president.

The packages are available both to time-sharing vendors and to users on a purchase, lease (yearly or monthly) basis. The applications are presently operational on the GE Mark II system and are written in Fortran. Hammersmith said that the company is in the process of converting the packages to a variety of time-sharing systems.

The packages include Equipment Replacement Model, Lease-Buy Analysis, Statistical Cost Control, Merger/Acquisition (not available until 1970), Probabilistic Cash Flow, Decision Tree, Economic Order Model, Business Projections, Line of Balance, and Depreciation Comparison.

The purchase price of the available packages is $3,000, except for Business Projections, which is priced at $6,000. A yearly lease is $1,000/year; a monthly lease is $100/month. Business Projections leases at $2,000/year and $200/month.

Time-Sharing Enterprises Inc. is located at 251 W. DeKalb Pike, Suite C-110, here.

New Clinical Program From IBM May Reduce Hospital Laboratory Workload

WHITE PLAINS, N.Y. – A $250/month program that is said to help reduce clerical work in hospital laboratories and speed clinical test reports to doctors has been announced by IBM.

The new program product, called Shared Laboratory Information System, organizes doctors' orders for tests, validates the results and directs a 360 to print test reports and post charges to patients' accounts.

The program can be used by a single hospital or by several hospitals sharing a central computer. In a shared system, each hospital would use its own test procedures and would have access only to its own information.

Hospitals can tailor the system by putting their individual requirements into a master data file that the program would use as a reference for clinical test procedures and report formats, according to the company.

Doctors' orders for clincial tests are transferred to punched cards and entered into the computer. The program issues a master list of pending tests, a schedule of specimen collections and laboratory worksheets specifying whether tests should be performed separately or performed simultaneously with automated instruments.

Results are automatically validated against limits established by the hospital and stored in the master data file. Results exceeding the limits are flagged for review by a doctor.

About 20 types of reports can be produced, including a monthly statistical analysis of all laboratory test results and daily summaries of tests performed and tests pending, the company said.

Charges can be posted to patients' accounts either at the time tests are ordered or when they have been completed, depending upon the hospital's procedures.

The program is compatible with IBM's Shared Hospital Accounting System (Shas) and operates with standard Shas executive routines. Hospital admission procedures, master files, record formats and management reports are common to both programs. Shas was available from IBM before the company's separate pricing announcement last June and remains available at no charge, according to the firm.

The Shared Laboratory Information System operates with 360 Models 25, 30, 40 and 50 under DOS. The program is scheduled to be available in the third quarter of 1970 at a monthly charge of $250, under a license agreement.

Payroll System Includes Four Time Report Types

VALLEY STREAM, N.Y. – A third-generation payroll system designed for the IBM 360/30 and up under DOS is being offered by Computer Procedures Corp.

A minimum of 32K of memory including supervisor is required to run the system, which is either disk- or tape-oriented (two tape drives are required for tape-oriented systems). The system is programmed in Bal assembly language.

The eight transaction inputs of the system include new companies, new employees, file updates, and special payment cards. After conversion, only two forms are needed for input, claims the company.

Four types of time reporting are included: regular time, overtime, shift time, and the unlimited company-defined special time such as vacations and unauthorized periods.

The payroll system includes labor distribution breakdown at time card level, four pay periods, payment calculations, tax calculations, voluntary deduction calculations, quarter-to-date accumulation, year-to-date accumulations, and modular design provisions, the company says.

Fifteen other features of the system include unlimited number of checks for each employee, automatic deposits, automatic savings account deductions, and automatic payments.

The price of $5,350 for the system includes complete systems and programming documentation, on-site customer orientation and instruction, installation assistance, and a 90-day guarantee against program or system errors. Optional systems maintenance for one year is an additional $950. Leases may be negotiated.

Delivery and installation takes 30 days, according to the firm.

Computer Procedures Corp. is located at 181 South Franklin Ave.

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'Tridem' Assists Surface Plotting

BELLAIRE, Texas – Houston Instrument adds to its line of applications, plotting software with the announcement of the Tridem three-dimensional plotting package.

In an effort to provide the user of Complot plotters and plotting systems with a full range of plotting software, the company has developed the Tridem package.

This package has been designed to incorporate most of the features currently offered by other 3-D packages and to be leased at a price substantially less than current competitors, according to the company.

The package is said to offer versatility in plotting a gridded array in three-dimensional space. Some of the features of the software package include the representation of stereo pairs, full hidden line capabilities and approximation of curvi-linear shapes.

The package is written in the basic Fortran IV language and can be installed on almost any computer system, the company says. The package will support the entire line of HI plotting systems (on-line, off-line and time-shared). The package requires approximately 3,500 words of core and runs in conjunction with the company's basic software.

The user communicates with the three-dimensional system by supplying parameters to the six basic Fortran subroutine entry points within the system.

Delivery of the Tridem plotting system began on December 1. The system is leased for a one-time lease charge with a small payment for lease renewal, according to the firm.

Houston Instrument Division of Bausch & Lomb is located at 4950 Terminal Ave.

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Terminal Frees Computer For Programmer Scheduling

PRINCETON, N.J. – An in-house terminal system is said to give programmers computer access when they need it, not at the discretion of the operations section.

Applied Data Research Inc. has developed Roscoe (Remote OS Conversational Operating Environment) so that programmers can create, test, and maintain programs without taking "a back seat to production jobs."

The on-line real-time system operates on IBM 360 Models 40 and larger, requires 64K of core memory, runs as a conventional job under OS MFT or MVT, runs concurrently and without interfering with normal batch processing, and supports remote devices including IBM 1050s, 2741s, 2260s and 2265s.

With Roscoe, programmers working at remote terminals can enter source programs and test data directly into Roscoe's disk library. Information stored in the library can be maintained, manipulated and displayed at a terminal by statement or by file.

An editing feature permits characters or phrases within source statements to be deleted, inserted or replaced.

Optional features available are syntax checkers for JCL, Cobol, Fortran, PL/1 program validation which can be activated by a terminal user. The additional charge is $100 a month for each syntax checker.

A conversational procedure facility permits a programmer to execute a series of stored Roscoe commands which build JCL statements and automatically combine library statements and files into valid OS job streams, according to the firm.

Individual programmers can compose Roscoe procedures (Rosprocs) at a terminal; or one installation can prepare standardized Rosprocs for all terminal users.

Remote scheduling of compilations and program tests can be accomplished with Roscoe. Compilations and tests are placed in a special OS job queue and are processed automatically or under control of the computer operator, the company said.

Diagnostic output of Cobol, Fortran, PL/1, and Assembly compilers and the source statements generating the diagnostics are delivered to the terminal at the programmer's request.

Samples of problem program or utility output also can be displayed in either report or dump format. The output from each step in a multistep job is logically organized so that each set of output can be conveniently retrieved, according to ADR.

In addition to the terminal facilities, large volumes of output can be directed to a high-speed printer.

The one-time installation and training charge for Roscoe is $2,000. Roscoe is available for delivery at a lease price of $1,000 to $1,500, depending on the selected options. Maintenance is included in the price, according to a company spokesman.

Training courses for applications programmers and operations personnel are offered as well as evaluation and correction of reported malfunctions. Documentation available includes a user's guide. A system programmer's guide for OS will be available later, reported a company spokesman.

Applied Data Research Inc. is located at the Route 206 Center.

Tymshare Improves Languages With Super Fortran and Basic

PALO ALTO, Calif. – Three improved software languages for time-sharing subscribers have been introduced by Tymshare, Inc.

A new language, Super Fortran, was introduced as an expanded superset of Fortran IV. Its features include 360/Fortran H compatibility and syntax and command mode extensions. In addition, Super Fortran offers random access files, faster program execution, more efficient data storage allocation, and string processing, the firm said.

Tymshare's Super Basic has also been expanded to provide faster program development with a wider range of applications and the elimination of I/O restrictions for faster execution speeds. Super Basic's features include a production optimizer, random access files, incremental compilation, and immediate error diagnostics for rapid program development, the company says.

A new version of Editor also has been introduced which will provide a capacity of 6,000 lines or 360,000 characters in upper and lower cases. In addition, Editor can now provide direct communication with Batch Fortran, and has an expanded FIND command that may be used with SUBSTITUTE and WRITE.

Tymshare Inc. is located at 525 University Ave., Suite 220.

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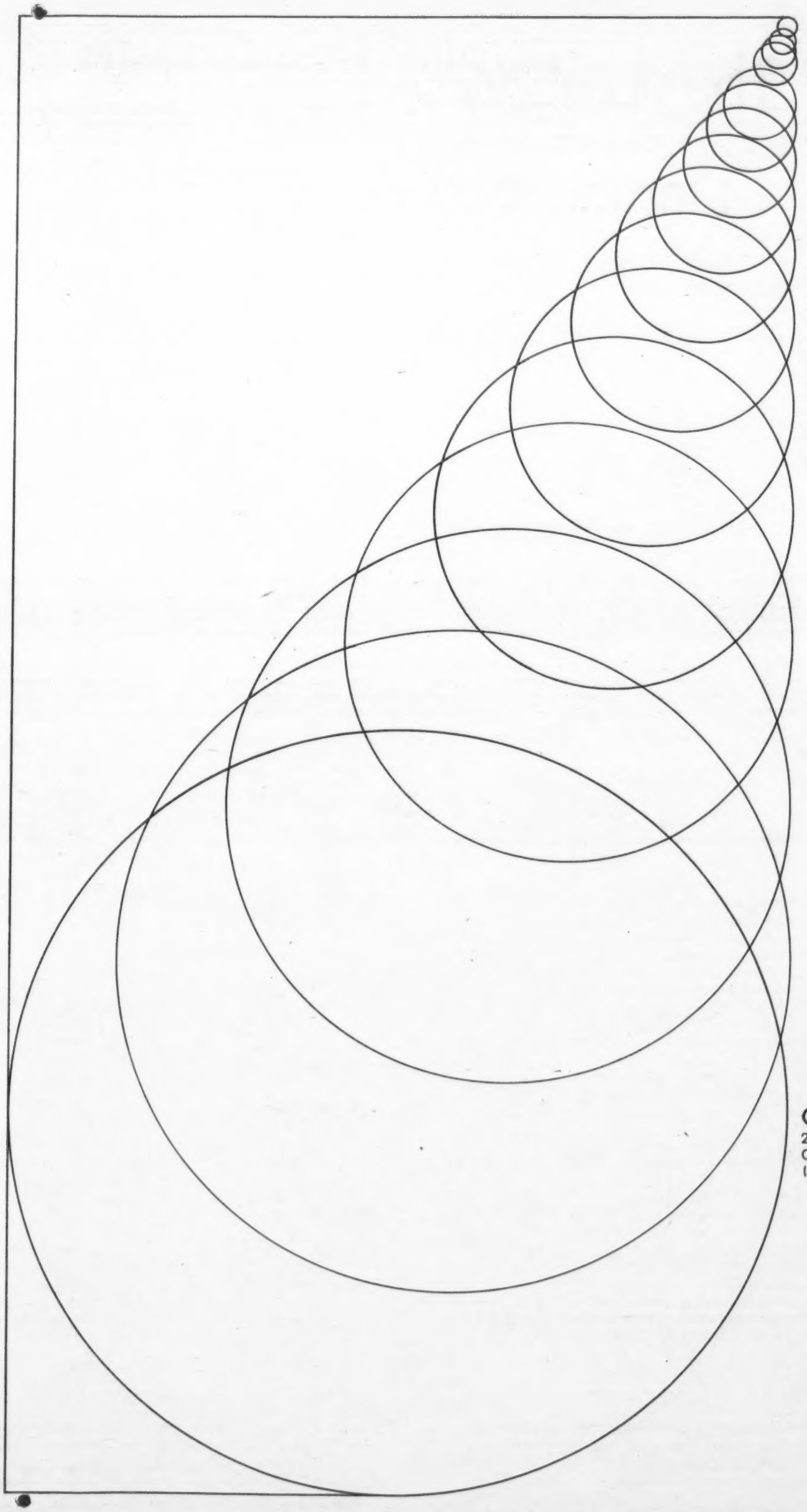

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RCA

Instant Response Generated to Scholarship Enquiries

HARRISBURG, Pa. – Pennsylvania college students asking about their state scholarship or state guaranteed loan are getting practically immediate response to telephone inquiries.

The quick action is made possible by the visual display of computer records on TV-like screens at the Pennsylvania Higher Education Assistance Agency (PHEAA) administrator of the state's two big scale aid-to-students programs.

The agency is using 16 visual display terminals hooked up to an IBM 360/40 to keep up with the records and inquiries involved in its $51-million scholarship program and $160-million guaranteed loan program.

The visual display terminals have a keyboard which agency personnel can use to have any one of the one-quarter of a million student master records flashed in front of their eyes in a matter of seconds. From data displayed on the screen, the operator can answer a student's query while the student is still on the telephone.

Scholarship Applications

PHEAA's computer plays the key role in determining scholarship recipients and the amount of their awards. Stored in the computer's files are the educational costs at all of the more than 3,000 institutions of higher education throughout the nation that Pennsylvania scholarship recipients may attend.

As scholarship applications are received, information about the financial status of applicants and their families is fed into the files.

The computer then performs an intricate "need analysis" checking the student's financial resources against costs at the school he wishes to attend. If the difference between resources and costs is greater than $200, the student is awarded a scholarship of up to $800.

While need analysis results are ordinarily printed out by the computer in bulk runs, a need analysis can be requested through the visual display system. The results, awards and amount, or rejection and reason, are immediately shown on the screen.

The visual display system becomes critically important in time saving when applications are incomplete or incorrect. Upon receipt of new information, it is entered directly into the computer files through terminal keyboards. The changes in the master record appear on the screen, and the operator knows immediately if it is complete, or if more information must be obtained.

The same procedure is followed if a student changes his plans or his status. He can notify the agency and have various alternatives, such as a different choice of school, entered into the computer. The computer then calculates the effect such changes would have on eligibility and immediately displays the results back to the terminal operator.

This academic year, PHEAA's computer system coped with a flood of 125,000 scholarship applications and selected 82,000 of the applicants to receive these awards. At the same time the system is keeping track of about 90,000 students who have guaranteed loans, some of whom have two or more. This year alone, the agency has guaranteed 42,000 loans.

Many Inquiries

The two massive programs result in a torrent of inquiries by telephone, letters and personal visits by students, their parents, state and school officials and state legislators.

Kenneth R. Reeher, PHEAA executive director, refuted contentions that use of the computer has eliminated the "human touch." On the contrary, he said, "The system helps our financial aid specialists by handling thousands of record keeping details and calculations automatically, allowing the specialist to concentrate on situations requiring individual attention."

In addition to operations associated with scholarship and loan processing, the agency utilizes its computer system to record correspondence and how it is handled, to compose and write some letters, to administer budget control, and to compile a mass of statistical data on scholarships and loan recipients and the schools they are attending.

The agency has coordinated its computer records with the Pennsylvania State University, the school with the most scholarship recipients. Coordination is expected to be extended to other colleges and universities in the state with computer installations.

Other future plans include installation of visual display terminals in the 13 agency regional offices spread throughout the state.

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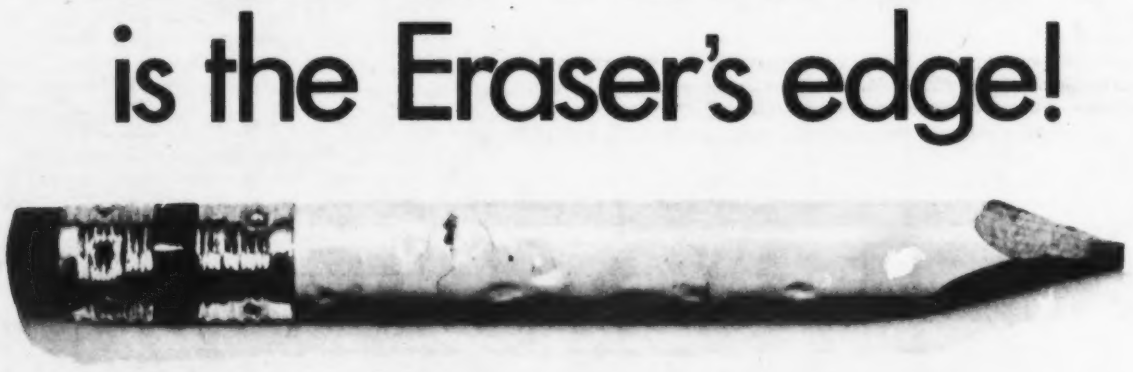

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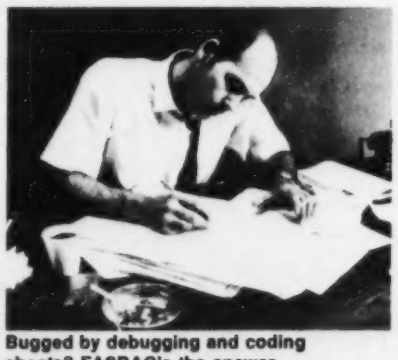

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COMPUTERWORLD

education

Franchised Computer School Sues Computer Environments

BOSTON – Charging noncompliance with the terms of a franchise agreement, Computer Applied Resources, Inc., Braintree, Mass., has filed suit to recover in excess of $30,000 from its franchisor, Computer Environments Corp., Hanover, N.H., a subsidiary of Time Share Corp.

A Time Share spokesman said his company had no immediate statement but that a statement would be issued in the near future.

Filed Dec. 1 in Suffolk Superior Court, the suit claims that in July, 1969, Computer Environments granted "an exclusive franchise to the Plaintiff for the operation of a Computer Environments Center, a school for the training of computer programmers." But the defendant had, it said, "failed to perform or do those things required of it under the terms and conditions of the said agreement. . . ."

Computer Applied Resources charges that the defendant agreed to provide services, including an operations training program, assistance in procuring students, financial advice, help in site selection, and instructional materials.

The Braintree firm alleges that these representations induced its entrance into the franchise agreement, but that Computer Environments advanced the statements "with the knowledge of their falsity."

A court spokesman said that it could be as long as a year before the case came to trial.

smtwtfs calendar smtwtfs

Jan. 7-9, Norwalk, Conn. – A course entitled Business Forecasting covering the design and implementation of forecasting systems, presented by Turnkey Systems Inc. Also, on Jan. 12-14 and again on Jan. 21-23, a course on Computer-based Manufacturing Planning & Control Systems. Contact: Joseph I. Barnett, Turnkey Systems Inc., 111 East Ave., Norwalk, Conn. 06851.

Jan. 12-13, New York – Computer Lecturing Co. is presenting a course on How to Use Computers Creatively. Contact: Computer Lecturing Co., 30 E. 60th St., New York, N.Y.

Jan. 12-14, Atlanta – A meeting concerning the Mark IV User Group (IV League). Contact: R.D. Stone, Informatics Inc., 5430 Van Nuys Blvd., Sherman Oaks, Calif. 91401.

Jan. 12-16, Los Angeles – The American Management Association is presenting courses on Finance and the Computer (1529-61), and Basic Data Processing for Non-EDP Executives (6508-73). Contact: Course Registration, AMA, AMA Bldg., 135 W. 50th St., New York, N.Y. 10020.

Jan. 14-16, Tampa, Fla. – The Third Annual Simulation Symposium. Contact: Annual Simulation Symposium, P.O. Box 1155, Tampa, Fla.

ECPI Proposes Proficiency Exam

NEW YORK – A uniform, nationwide proficiency examination for all entry-level programmers has been proposed by Sidney Davis, president of the Electronic Computer Porgramming Institute (ECPI).

The test would seek to provide an objective technique for measuring the competence of all job applicants regardless of their previous education and training.

Davis sees the move as a step toward opening wider a job market habitually cornered by grey-suited, college-educated math majors.

"In short, too many people responsible for hiring data processing personnel cannot objectively interview and hire programmers with less than a college degree," he explained.

He cited frequent industry criticism of data processing school graduates and countered, "... [W]e have proved that men and women from a wide variety of backgrounds can learn to program computers for business and industry with intense professional curriculum and training."

It is hoped that, faced with the prospect of preparing students to pass a standard test, computer schools would be motivated to upgrade their curricula and teaching staffs to insure providing the requisite level of ability.

At present, he said, there are no plans to make the results from various data processing schools available to prospective students to aid in the school selection process.

Davis suggests that the exam's contents be determined by a representative group of manufacturers, users, employers, and educators. "Our current timetable calls for organizing [such] a group by the middle of February," he added.

Society Involvement

Administration of the exam, he hopes, would be undertaken by one of the professional societies, such as the Data Processing Management Association or the Association for Computing Machinery.

Davis likened the program to the Bar exam given to law school graduates and CPA exams for accountants seeking certification, with the tests being given at preset times in a central location.

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Growing IACP Outlines Projects

SYCAMORE, Ill. – The International Association of Computer Programmers, Inc. (IACP), a recently formed nonprofit organization [CW, Oct. 15], now has 13 member chapters, one satellite student organization, and plans for an international membership meeting in June, 1970.

According to its organizers, IACP is designed "to reflect the professional stature of the computer programmer in society and, through effective two-way channels of communication, remain alert to his opinions and needs."

The scope of the group's activities has been refined, with the following scheduled for implementation in 1970:

- A monthly magazine featuring articles on programming languages, techniques, and the programmer's relationship to his company;
- A monthly newsletter to inform the membership of the progress and upcoming activities of the organization;
- Scholarship, loan, and work-study programs for continued education in the programming profession;
- Educational seminars, lectures, and exhibits;
- Publication of education materials, and
- State, regional, national, and international membership meetings.

Lawrence M. Vanucci of Computer Advisors to Management has been named president of the group. Richard T. Lynch has been appointed executive vice-president; and Donald J. Spapperi is vice-president of finance and treasurer.

Three membership classifications are available. "Active" members must periodically perform computer programming in their occupation. Affiliate memberships are available for those who do not program, but have a professional interest in data processing. Student memberships are available for those engaged in many forms of computer education.

The group is not working in conjunction with any other data processing society. Additional information is available from the society at P.O. Box 57, Sycamore, Ill. 60178.

COMPUTERWORLD

societies

EDP Honorary Initiates Chapter at Penn State

By Kate Rachstein
CW Education Editor

COLLEGE STATION, Texas – Upsilon Pi Epsilon, an honor society for students in computer science founded at Texas A&M University in 1967, has installed a second chapter for 33 members at the University of Pennsylvania.

A third school, the University of Southern Louisiana, is considering establishing a THE chapter. Prospects of forging the organizations into a national body are now greatly increased, according to Dr. Dan Drew, A&M professor and THE advisor.

National Conclave Planned

When five chapters have been installed, the society hopes to call a convention to determine a national structure, a THE officer said. A proposed national constitution and by-laws already have been drafted by members of the Alpha chapter at A&M.

In addition to encouraging high scholarship, THE goals include recognizing individual contributions to data processing, providing an environment of growth for computer science, representing computer science in interdisciplinary communications, and maintaining professional standards.

Alpha chapter president Dan Galvin noted that the requirements for individual student membership generally will be set by the local body. Although usually, he said, the requirement is that a student have completed more than one semester and be in the upper third of his class.

Chapter Requirements

Qualifications for chapter status include:

- Satisfactory course offering and degree requirements in computer science by the school.
- A petition by eligible students and graduates stating their desire to affiliate and expressing willingness to subscribe to the constitution and by-laws of the association and to work toward the formation of a national association.
- Certification that the petitioning students are eligible for membership under the proposed constitution.
- A proposed constitution and by-laws.
- Additional information about the composition and organization of the proposed chapter.

Students interested in organizing a Upsilon Pi Epsilon chapter on their campus may obtain additional information from Dr. Dan Drew, Data Processing Center, Texas A&M University, College Station, Texas 77840.

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'Design Economies' for Computers Lead To Performance-to-Cost Improvements

WELLESLEY HILLS, Mass. – The general manager of Honeywell's Electronic Data Processing Division predicted that technological "design economies" now being developed for computers will lead to dramatic performance-to-cost improvements for many hardware components during the 1970s.

Robert P. Henderson, vice-president and general manager of Honeywell EDP, said the performance-relative-to-cost of the two basic building blocks of computer central processors – logic circuits and memory – will show the most dramatic improvements.

He said performance of logic circuitry compared to its cost is expected to increase at least five fold by 1975.

At the same time, he said, the speed of main memories will increase while the total cost per memory bit drops by a factor of at least three by 1975.

In a year-end statement, Henderson said, "These cost and capability trends in the electronic logic and memory areas will make possible construction of computer hardware with increasing capability, complexity and power.

"For example, instead of packing all the processing capability into the central processor in the computers of the future, the processing power will be distributed throughout the whole system.

"Terminals and other peripherals with their own logic and memory will become commonplace, simplifying the task of the central processor and increasing the total efficiency of the system.

"Most important," Henderson said, "these design economies will allow computer manufacturers to offer the user a variety of techniques to obtain great efficiency and reliability while receiving much improved computing power.

"The current trend toward bigger, faster and more complex machines will continue and accelerate in the 1970s.

"However, since a far greater portion of the operating system will be handled by logic in each of the various parts, the total system will not become unwieldy or unworkable.

"In addition, many systems will be so organized that if one processor or peripheral fails, it may be automatically cut out of the system until repaired, thus eliminating total failure.

"These developments come from an evolution of present technology as well as from new technology moving from the laboratory to the user's facility," Henderson said.

GE Adds Two Service Districts

MOUNTAINSIDE, N.J. – Two new field service districts have been established by GE's information systems sales and service field engineering department.

The new services represent a move to better serve GE computer customers and to improve the ability to serve future customers in the New York-New Jersey area.

The new suburban and the metropolitan districts replace the former New York district. The suburban district includes all FED sites in northern New Jersey plus West Point, N.Y., while the metropolitan district covers the New York City-Long Island areas.

Named to new positions are Will R. Evans to head the metropolitan district with offices at 641 Lexington Ave., and Billy T. Adams, manager of the suburban district with offices at 250 Sheffield St., Mountainside, N.J.

Evans has been a field service manager in the New York district for the past three years. Adams has been manager of maintenance operations for the eastern region for the last three years.

Trade Shorts

Bradford Computer & Systems, Inc. has a new five-year agreement with International Paper Company extending the present contract under which Bradford manages and operates IP's corporate computer data center in New York City.

Keydata Corp., of Watertown, Mass., and AGT Data Systems Limited, of Toronto, Ontario, have signed a licensing agreement which gives Keydata Canada, a newly-created division of AGT, the exclusive right to market and provide Keydata's online business data processing services in Canada.

Boothe Resources International, Inc., 3435 Wilshire Blvd., Los Angeles, has been appointed dealer in the western U.S. for computers and peripheral equipment manufactured by Viatron Computer Systems Corporation.

Marketing will be handled out of BRI offices in Los Angeles, San Diego, San Francisco, Sacramento and Olympia, Washington. Demonstration of Viatron equipment and training is offered at all offices and at the new BRI Computer Resource Center, 3550 Wilshire Blvd.

Especially when it comes to digital data. The new Bell & Howell DIR-6100 Incremental Digital Magnetic Tape Unit can be used to read and write digital information in any system that now employs punched paper tape. The instrument offers several important advantages.

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Acquisitions

Venture-Data Corp., Conshohocken, Pa., and **Drexel Data Systems, Inc.**, Philadelphia, a data processing software and consulting firm, have reached a merger agreement whereby Drexel Data Systems will become an operating division of VDC.

Raytheon Co. and **Visual Electronics Corp.**, New York, have reached an agreement in principle on the purchase of Raytheon's electronic learning systems business by Visual Electronics. Under terms of the agreement, Visual Electronics will assume the inventory, receivables, and on-going business of the Raytheon Learning Systems Co., Michigan City, Ind. Raytheon will receive 100,000 shares of common stock, 15,000 shares of convertible preferred stock, and $3.5 million in 15-year promissory notes.

Chicago Tabulating Service, Inc., Chicago, a wholly owned subsidiary of Data Processing Development Corp., New York, has acquired **Computer Processing Unlimited, Inc.**, Chicago. The terms were not disclosed.

KDI Corp., Cincinnati, Ohio, has reached an agreement in principle to acquire **Anacomp, Inc.**, Indianapolis, Ind. Under terms of the agreement, for each share of Anacomp stock, KDI will give either 28/100 of a share of KDI common stock, or $8 worth of KDI common stock, whichever is greater; or 213/1000 of a share of KDI common stock plus possible additional consideration, depending upon Anacomp earnings over a five-year period beginning with the consummation of the acquisition. KDI is an international company serving the electronics and computer industries, aerospace and defense programs, environmental sciences market, education, and physical recreation. Anacomp is a consulting firm dealing with computer sciences, education, financial management, urban analysis, and systems sciences.

Geodatic, Inc., Princeton, N.J., a company providing computerized demographic services for advertising, marketing, market research, and magazine reader response, has agreed to acquire the business and assets of **National Compu-Graphix, Inc.**, Jenkintown, Pa., a privately owned designer and distributor of computer forms and supplies. Terms of the agreement call for National Compu-Graphix to be acquired for an undisclosed amount of Geodatic common stock and a future earnings payout in stock.

Photo Magnetic Systems, Inc., Beltsville, Md., has announced a series of planned acquisitions. The companies acquired are: **The Multiple Science Corp.**, Asbury Park, N.J., and its wholly owned subsidiaries, **Universal Programming & Systems, Inc.**, Bethesda, Md., and **Commercial Computer & Mailing Services, Inc.**, a District of Columbia corporation. These companies will provide an IBM 360/30 with a talking Comput-a-phone to permit Photo Magnetic Systems, Inc., through its franchised companies, Comput-A-Credit of D.C., Inc., and Computer Telephone Co. of D.C., Inc., to offer communication oriented, computer-based services at reasonable prices to the consumer public and the small business man.

Computer Exchange, Inc., New York, has begun talks that may lead to its acquisition of **Capital Corporate Resources, Inc.**, a holding company headquartered in Philadelphia.

3i Forms Data Bank Service Subsidiary

New Subsidiaries

PHILADELPHIA – The 3i Co. Information Interscience Inc., Philadelphia, has formed a new and wholly owned company, Excerpta Medica Information Systems, Inc..

The new company is the result of an agreement between 3i Co. and Excerpta Medica Foundation of Amsterdam.

The result of the agreement will be the operation and marketing in the U.S. of Excerpta Medica's computerized information and data bank services, including the Excerpta Medica automated storage and retrieval program of medical information.

In addition, the company will operate and market a drug literature computer service developed by Excerpta Medica of Amsterdam.

Each year, abstracts and references from over 200,000 individual biomedical articles are stored in the data banks, representing the largest bio-medical information data base in the world available commercially. The full range of services based on the new data bank will be operational early in the first quarter of 1970.

The Drug Literature Computer Services (Drugdoc) is designed especially to meet the information needs of pharmaceutical-industrial companies. Drugdoc provides highly specific medical and chemical information derived from international biomedical literature on all experimental and marketed drugs and chemical compounds.

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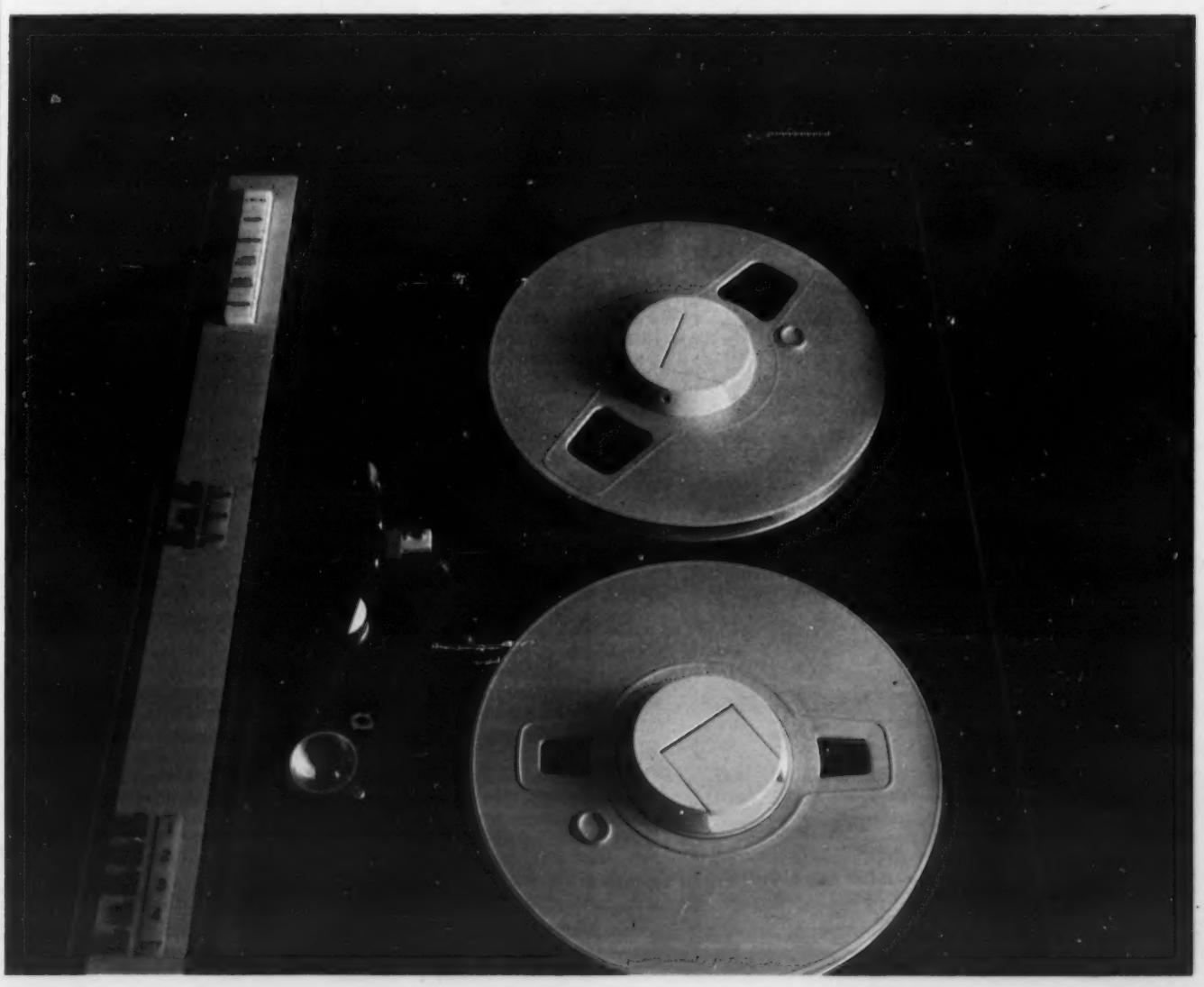

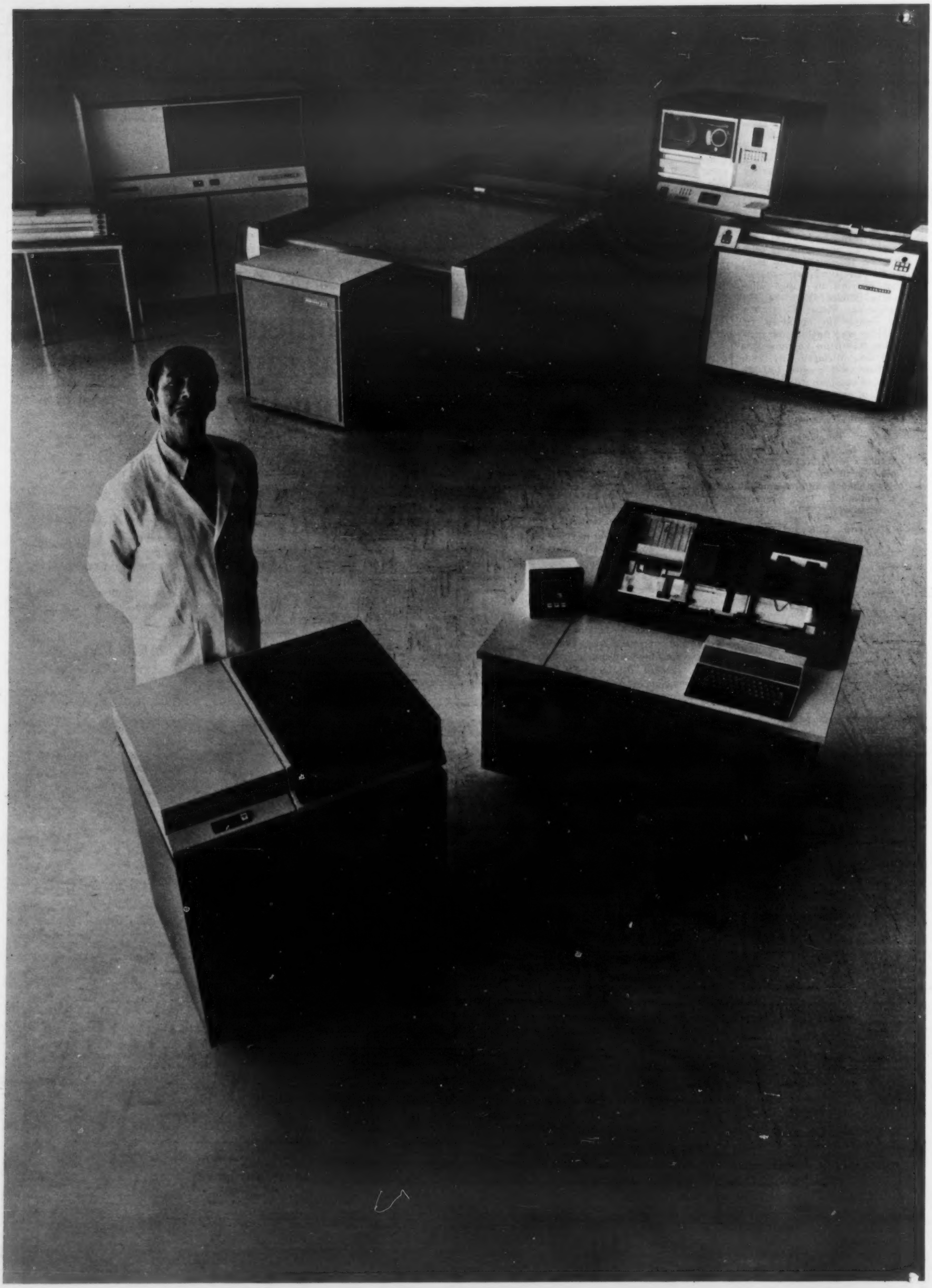

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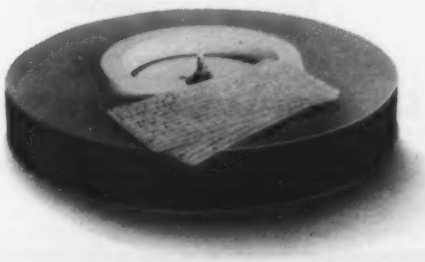

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Orders and Installations

Delta Data Systems has sold two proprietary computer systems to Worthington Turbine International of Wellesville, N.Y. The sale includes the Delta general ledger system and the Delta accounts payable system. Both systems cost $10,000 when on sale to private users. When it is installed in Jan., 1970, the accounts payable system will provide input directly to the general ledger.

A $700,000 contract has been received by Gerber Scientific Instrument Co. of South Windsor, Conn., from Fiat of Turin, Italy. The automotive and aircraft divisions of Fiat purchased similar Gerber 1075s; both are equipped with automatic line followers. The 2075s consist of a Series 2000 stored program computer control and Model 75 drafting table.

A real-time computer system using an ICL 4-70 central processing unit will be in operation early in the new year at Vehicle & General Insurance Co. The new system from International Computer Ltd. of London will give the company instant access from branch offices to a central file giving the current status of all their policies.

A $304,352 order comprising two communications processors and related accessories and peripherals, special software development, and maintenance has been received by Comcet Inc., Rockville, Md., from Optimum Systems Inc. of Palo Alto, Calif. The addition of the Comset 60 will enable Optimum Systems' computer center to communicate with the widest possible variety of remote terminal installations.

An inertial guidance test table has been delivered to the aerospace division of Honeywell Inc. at Minneapolis by the Fecker systems division of Owens-Illinois. The multi-purpose inertial equipment test system is slated to be used by Honeywell initially in the design of the guidance components for an advanced satellite control system, although it will also be used for a variety of other rate and position control applications.

A Burroughs B340 electronic data processing system valued at more than $170,000 has been installed at the Brighton State Bank in Brighton, Mich. The system is now used primarily to handle demand deposit and proof-in-transit bookkeeping, and will later handle savings, mortage processing, and the Christmas Club.

NOTICE OF ADVERTISING RATE INCREASE

Because of increased circulation (up over 30%) in 12 months, and to meet increasing production and distribution costs, and to continue the improvement and expansion of our editorial and news coverage of the computer industry, we are announcing a rate increase effective January 1, 1970. The increase averages less than 20% over our current rates. This keeps CW the most cost effective medium in the industry, the most frequently read, and the most timely publication.

Contracts received by Computerworld prior to October 15, 1969, will be protected under existing rates for the duration of the contract. Contracts received between October 15, 1969, and December 31, 1969, will be billed under Rate Card No. 4 until Dec. 31, 1969, at which time they will transfer to Rate Card No. 5 and maintain their lineage rate basis.

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Contracts

The automobile's contribution to air pollution will be studied by TRW Inc. of Redondo Beach, Calif., under a pair of research contracts totaling $700,000 from the Coordinating Research Council on behalf of the auto and oil industries, and the U.S. Department of Health, Education and Welfare. With support from Scott Research Laboratories, Inc., TRW's systems group plans to develop improved inspections, maintenance and surveillance tools, and procedures for smog control devices.

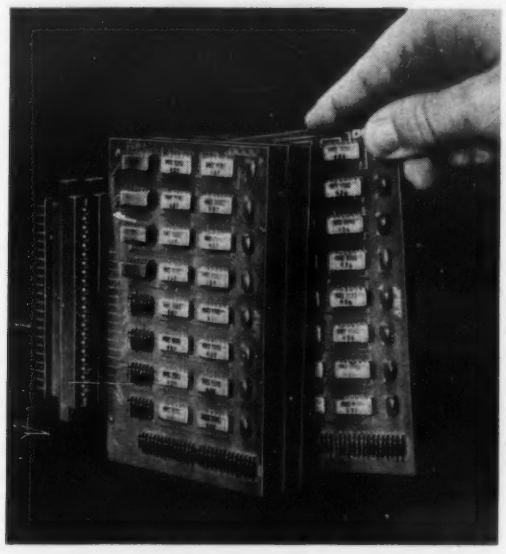
An 11-year agreement has been signed by Boise Cascade Computing, Inc. and the California State Employees' Credit Union No. 1, at Sacramento, for an on-line/real-time data processing system. The credit union will be linked to the Boise, Idaho, computer utility on leased telephone lines so that immediate access to data can be provided for the credit union's transactions.

The Federal Aviation Administration has selected United Telecontrol Electronics, Inc., Asbury Park, N.J., to develop improved modulation testing equipment for aircraft instrumentation landing systems. The new modulation meter will be designed to minimize the chance of operational error as well as to improve modulation measurement techniques.

An initial $13,620 contract from the Urban Institute has been received by the Hendrickson Corp. of Washington, D.C. The contract, which will be implemented over a four-month period, calls for cost studies of various family assistance and income maintenance programs under development by the Administration, and their impact or effect on reducing national and regional poverty.

A $222,361 contract for regrading and renumbering portions of the existing U.S. military telephone network in southern Japan has been awarded to the Nippon Electric Co., Ltd. of Tokyo by the Air Force Electronic Systems Division.

15 nano-second memory...



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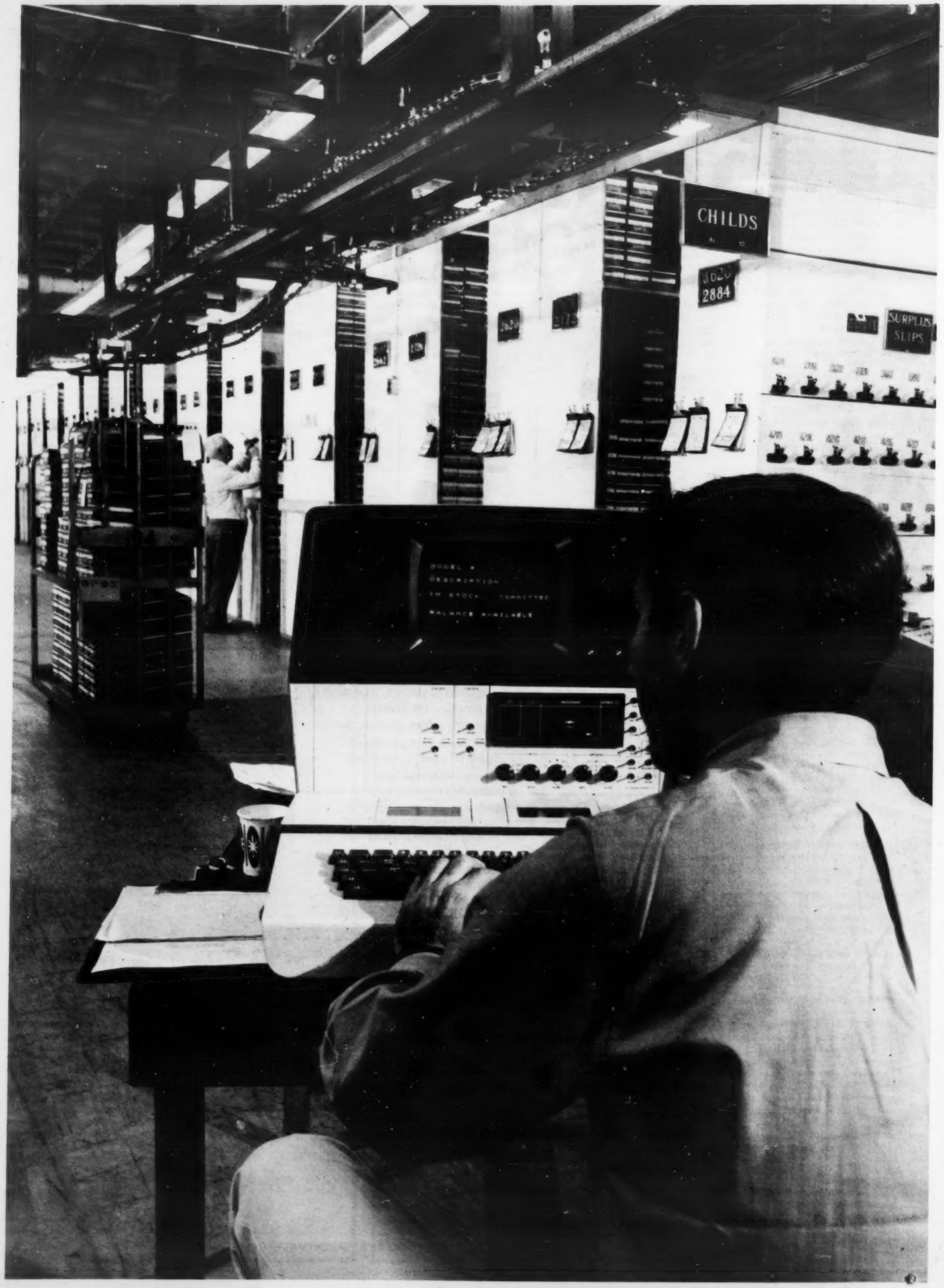
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SEL Names Schwartz V.P. - Programming

FORT LAUDERDALE, Fla. – Systems Engineering Laboratories, Inc., has appointed Seymour D. Schwartz vice-president of programming.

In his new position, Schwartz is responsible for the planning, development, and maintenance of software systems which support the company's real-time computers and related equipment. He formerly was director of programming at Systems.

Before joining the company in Feb. 1967, Schwartz was manager of project programming at Scientific Data Systems in El Segundo, Calif. During his 10 years in the computer industry, he has also held programming posts at Computer Sciences Corp. in El Segundo, Information Systems, Inc., in Los Angeles, and System Development Corp. in Santa Monica.

Schwartz holds a B.S. in chemical engineering from the University of Southern California.

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Executive Corner

Connelly Elected V.P. and Gen. Mgr. of CT/South

JACKSONVILLE, Fla. – CT/South Inc. has elected Fred V. Connelly vice-president and general manager of the Florida division.

In his new position, Connelly will assume full responsibility for directing all marketing and operations activity throughout Florida.

Prior to joining CT/South, Connelly had a lengthy career with IBM where he served in numerous management positions during the last 14 years. His most recent position was branch manager in Concord, N.H. He also had served as marketing manager, marketing training instructor, and account representative.

Connelly received a B.S. in business administration from Ohio University, Athens.

CT provides professional computer management services to commercial, industrial, and governmental organizations throughout the U.S.

Other Moves

- Raymond W. Tritch has been appointed vice-president of engineering and manufacturing for DSI Systems, Inc., Rockville, Md.
- International General Electric Puerto Rico Inc. has appointed Marvin R. Broz manager of computer time-sharing sales in Puerto Rico.
- Astrodata, Inc., Anaheim, Calif., has announced the following appointments: David F. Barnes to vice-president, and Robert B. Baker to the newly created position of executive vice-president. Barnes will continue to serve as general manager of Astrodata's data devices division. Baker continues as a member of the board of directors.
- Control Data Corp., Minneapolis, has promoted Robert C. Olson to staff general manager, corporate quality assurance. He will supervise a staff which serves as a focal point for development, direction, and analysis of manufacturing plans dealing with all facets of quality assurance as they pertain to the manufacture of Control Data's products.
- Communications Logic, Inc. of Houston, has named Jon H. Blasdell Jr. and George A. Mayfield vice-presidents.
- David M. Collins has been appointed development manager at Remcom Systems, Inc., Dallas.

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11-14 K

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12-18 K

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10.5-14.5 K

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20-30 K

National Consulting firm is now searching for a Senior Staff Analyst to head up their software development department. Emphasis is on Compiler development & language expertise. The man will be a project leader doing technical support and customer interface. Education is open, experience is the key.

B A L FINANCIAL CONSULTANTS
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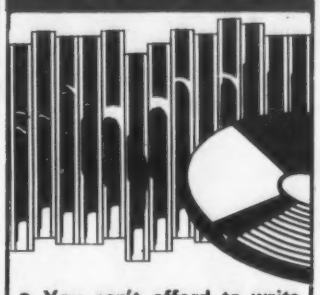

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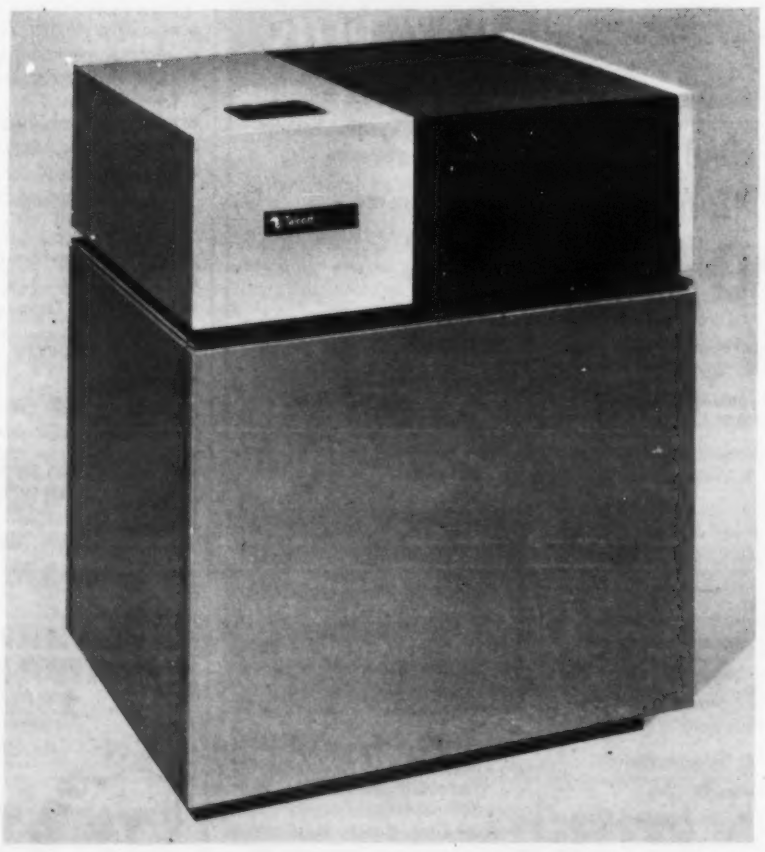

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Datatab Results Meet Predictions; Chairman Sees 33% Growth Rate

NEW YORK – Forecasting higher operating levels for 1970, the chairman of Datatab, Inc. has reported that results for the year ending Dec. 31, 1969 are expected to meet earlier predictions.

Chairman and Chief Executive Alvin L. Steinhart said that earnings, based on Datatab's currently outstanding 591,000 shares, should be in the 15 cents to 20 cents per share range, with net income amounting to about $75,000 to $100,000 on revenues of about $3.5 million to $4 million in calendar 1969.

"Thereafter," he said, "we can expect Datatab's sales to advance at a 33% growth rate, based on in-house budgeting. 1970 sales, therefore," he announced, "should exceed $4.5 million with net income in the neighborhood of $275,000 to $325,000, equal to about 50 cents to 60 cents per share."

He admitted that earnings in calendar 1969 had been slowed somewhat, "but deliberately so," he said, by the merger of Tabulating & Data Processing, Inc. into Datatab this past June. He described the merger as "a carefully calculated management move undertaken to acquire TDP's outstanding data processing product lines which ideally complement Datatab's operations."

Steinhart added that "TDP's excellent accounts receivable and law office analysis packages, if developed in-house by Datatab, would have been far too costly and time-consuming to undertake.

Therefore, the merger, which meant the absorption of TDP's first-half loss, was a logical and premeditated move and an investment in Datatab's future growth."

He noted that TDP's margins are expected to improve considerably as the integration of the two companies progresses.

In calendar 1968, based on a pooling of the combined companies, Datatab's net income amounted to $173,549, or an adjusted 29 cents per share, on revenues of $2.9 million.

Time-Sharing Terminals Wins $10 Million Credit

WASHINGTON, D.C. – Westinghouse Credit Corp., Pittsburgh, subsidiary of Westinghouse Electric Corp., and Time-Sharing Terminals Inc., Washington-headquartered computer data communications equipment and service company, have signed a three-year agreement providing Time-Sharing Terminals Inc. with a line of credit of up to $10 million.

The credit line is subject to Westinghouse Credit Corp.'s continuing approval of the operations of the company, and other terms and conditions.

"Signing this agreement with Westinghouse Credit allows Time-Sharing Terminals to continue an aggressive equipment acquisition program during the coming year," said John C. Young, Time-Sharing Terminals president. "And the terms of the agreement permit us to use our equipment as secured debt with no dilution to the equity structure of the corporation."

Time-Sharing Terminals Inc., incorporated in November, 1968, had a $3.5 million public stock offering earlier this year. It operates offices in 13 major cities throughout the U.S., and provides national telecommunications service to the computer time-sharing and industrial communications industry.

The company works with more than 30 time-sharing companies and their customers in the U.S. including University Computing Corp., Com-Share, Inc., United Computing Systems Inc., Westinghouse and Applied Logic Corp. Time-Sharing Terminals also provides terminal service to corporations requiring in-house computer data communications networks, including such users as the Marriott Corp.

Faim Unaudited Net Doubles

NEW YORK – Faim Information Services, Inc.'s profit for the fiscal year ended Nov. 30, 1969, will be at least double that of 1968.

Robert Snoyer, Faim chairman and president revealed that "unaudited figures indicate a minimum profit of about 6-1/2 cents per share."

Brokers Sued for $25 Million In Scientific Control Squabble

DETROIT – The latest reverberation of Scientific Control Corp.'s bankruptcy is a $25 million suit by a bank and a businessman against Merrill Lynch, Pierce, Fenner & Smith for allegedly recommending SCC.

The Bank of the Commonwealth and James Simon, a Dallas restauranteur, contend that they were "induced" to buy SCC through the "improper, irresponsible, misleading, deceptive, fraudulent, and negligent statements, representations, and acts" of the world's largest brokerage house.

A Merrill Lynch spokesman replied that the suit was "ridiculous," and that they had "never handled transactions in the company's stock for the bank. We don't see how the bank has cause to sue us."

Scientific Control filed a Chapter XI bankruptcy petition Nov. 21. The Bank of the Commonwealth is one of its largest creditors.

Class Action

The suit was filed as a class action on behalf of some 6,000 additional persons who allegedly "were similarly induced to purchase over 400,000 shares" or about 30% of SCC's common.

The suit says that during March 1968, the brokerage concern issued various recommendations for purchase of Scientific Control stock, and continued "recommending and influencing the purchase" of the company's stock through both written and oral means through Oct. 17 of this year, and through oral means up to Dec. 16.

Yet, the suit claims, "on numerous occasions, beginning in March 1969, officers of Scientific informed certain employees and agents" of Merrill Lynch that Scientific Control was "in precarious financial condition." The suit also claims it was the "duty" of Merrill Lynch "to investigate into the financial condition of Scientific."

The Bank of the Commonwealth made loans of over $2 million to SCC earlier this year. As part of the collateral for the loans the bank received pledges of SCC common. SCC is currently selling in the $5 range.

The bank asserted in its suit that in making the loans and in accepting the pledge of the Scientific Control stock it relied in part on recommendations of Merrill Lynch's "officers and agents" for the purchase of Scientific Control common, and in part on the market price of the stock, which at that time ranged from $25 to $34 a share.

The suit claims "statements, advertisements, representations and acts" by Merrill Lynch representatives created "an artificial market" for Scientific Control common and inflated its value.

Applied Data Research To Sell 1,000th Autoflow

PRINCETON, N.J. – Applied Data Research, Inc., computer software and service company, has sold its 1,000th Autoflow, according to Richard C. Jones, ADR president. The actual sale, he said, would take place later this month.

"This is a milestone in the computer software industry," Jones said. "We are the first company to have successfully produced and marketed this number of a single proprietary program."

Autoflow, an automated documentation and debugging system, produces accurate and standardized two-dimensional flowcharts and other aids for documentation and debugging.

The market for Autoflow is far from saturated, he said. There are more than 20,000 computers – IBM 360, 1401, 7090 systems; H-200 systems and RCA Spectra systems – currently on the market that could use Autoflow.

"We believe that the continuing shortage of programmers means that more emphasis must be placed on ways to make data processing more efficient and economic. New computer systems will also require documentation programs which adds to Autoflow's future life," Jones added.

Autoflow is leased on a three-year basis at $4,200 to $16,000 depending on options selected.

Effective Jan. 1, 1970, there will be a 10% price increase, the first such increase since Autoflow was initially marketed.

Battelle Forecasts Slight Gain in U.S. R&D Spending

COLUMBUS, Ohio – Expenditures in 1970 for research and development in the U.S. are expected to total $25.7 billion, according to the annual R&D forecast of the Columbus Laboratories of the Battelle Memorial Institute.

This would represent an increase of less than 1% over the total estimated for 1969; and industry, rather than the federal government, will be largely responsible for the modest increase that is expected. Because of increases in R&D costs, this could mean, in fact, a reduction of as much as 7% in the real level of R&D effort.

In terms of dollar value, roughly 15% of the computers sold in the U.S. are scientific, devoted to R&D.

Breaking down the estimate for calendar year 1970 by source of funds, the forecast sees the federal government spending $15 billion; industry, about $9.4 billion; colleges and universities, about $922 million; and other not-for-profit institutions about $408 million.

Federal R&D funds in 1970 are expected to be off by about $200 million from the total for 1969, but those supplied by industry are likely to be up about $300 million.

Colleges and universities, according to the forecast, will supply $66 million in additional funds; other not-for-profit institutions will provide about $31 million in additional funds.

On the basis of these predictions, the federal government will be the source of 58% of the R&D funds spent in 1970 – a decline of one percentage point from the estimate for 1969.

Industry is expected to provide about 36% of all R&D support, up slightly from the 1969 estimate. The 3.6% that colleges and universities are expected to provide and the remaining 1.6% from other not-for-profit sources would also represent very modest increases in their shares.

While the federal government continues as the major source of R&D funds, the forecast notes that its share of total funding has declined gradually from a high of just over 65% in 1964 to the 58% estimated for 1970. The industry-funded share has moved in the opposite direction over the same period, from about 31% in 1964 to 36% in 1970.

Shorts in EDP Stocks Up Slightly On New York, American Exchanges

NEW YORK – Short interest in computer stocks on the New York and American Stock Exchanges rose slightly in the month ended Dec. 15.

Short positions in 23 selected stocks on the Big Board gained 117,606 from 1,682,886 on Nov. 15 to 1,800,492.

The Curb showed a similar small rise of 14,647, from 543,707 to 558,354.

The short interest is the number of shares not repurchased for return to lenders and represents a definite backlog of potential buy orders.

The seller generally anticipates a price drop that will enable him to repurchase an equal number of shares at a lower price.

The following tables show the New York and American Exchange computer stocks in which a short position of at least 20,000 shares existed on Dec. 15, or in which there was a short position change of at least 10,000 shares since November..

N.Y. STOCK EXCHANGE		
Amer Research	73,374	80,731
Ampex	35,643	43,343
Bunker Ramo	30,795	32,351
Burroughs	82,788	65,562
Computer Sciences	235,383	123,168
Control Data	110,465	114,392
Electronic Memories	25,185	1,887
Gen Electric	26,441	21,670
Hewlett Packard	48,383	46,832
Honeywell	22,388	23,680
IBM	61,781	61,700
Leasco Data Proc	88,962	124,515
Memorex	64,117	48,465
NCR	42,180	28,807
Planning Research	80,740	77,028
RCA 3	36,141	38,234
Sanders Asso.	76,192	88,932
Sangamo Elec	14,250	24,400
Scientific Resources	27,043	27,869
Sperry Rand	139,514	165,201
University Comp.	110,388	71,846
Varian	15,578	68,227
Xerox	352,761	367,168
AMERICAN STOCK EXCHANGE		
Astrodata	35,327	26,852
Computer Inv. Group	28,550	29,400
DPF&G	69,489	71,689
Data Prod.	74,534	47,549
Digital Equip.	45,617	46,522
Itel Corp	47,578	65,723
Leasco Data wts 78	38,438	45,018
Levin-Town Comp.	38,226	47,092
Mite Corp	9,265	50,815
Mohawk Data Sci.	48,828	45,341
Telex	98,317	53,318
Wang Lab	24,185	14,388

Earnings Reports

APPLIED MAGNETICS CORP.

Year Ended Sept. 30

	1969	a1968
Shr Ernd	$.78	$.57
Revenue	20,265,252	14,314,457
Earnings	1,535,511	1,084,501

a-Restated for acquisition of Diceon Electronics Inc. on a pooling-of-interest basis.

CCI CORP.

Three Months Ended Oct. 31

	1969	1968
Shr Ernd	$.08	$.21
Revenue	20,154,000	27,840,000
Earnings	340,000	886,000
a6 Mo		
Shr Ernd	.20	.41
Revenue	42,803,000	55,304,000
Earnings	841,000	1,734,000

a-Consists of common shares outstanding and common stock equivalents, assuming full conversion of the $1.25 Series A preferred stock.

GRAPHIC CONTROLS CORP.

Year Ended Sept. 30

	1969	1968
Shr Ernd	a$1.10	$.1.11
Revenue	22,822,473	20,898,040
Spec Chg	b127,470	.....
Earnings	c782,388	893,657

a-Based on income before special charge; b-From relocation of manufacturing operations; c-Equal to 95 cents a share.

SEQUENTIAL INFORMATION SYS.

Year Ended July 31

	1969	e1968
Revenue	1,414,403	1,694,626
Loss ct op	499,081	d63,799
aLoss ds op	165,002	21,673
Spec Chg	b134,780	c34,383
Earnings (Loss)	(798,863)	76,509

a-Attributed to operation of subsidiary prior to disposal, net of tax effect; b-Consisting of $107,846, actual loss, on disposal of subsidiary and $26,934 loss, on abandonment of land; c-Credit; tax loss carryforward; d-Income; e-Restated to reflect the discontinuance of the business of Sequential Computer Corp., a wholly owned subsidiary.

REYNOLDS & REYNOLDS

Year Ended Sept. 30

	1969	1968
Shr Ernd	$1.27	$1.13
Revenue	43,345,035	36,929,762
Earnings	2,872,613	2,541,190

HEWLETT-PACKARD CO.

Year Ended Oct. 31

	a1969	1968
Shr Ernd	$2.01	$1.66
Revenue	324,000,000	268,849,000
Earnings	25,400,000	20,825,000

a-Preliminary.

WYLE LABORATORIES

Three Months Ended Oct. 31

	1969	e1968
Earnings	c352,648	752,768
9 Mo		
Shr Ernd	a.29	.55
Revenue	77,196,554	44,277,555
Spec Cred	b149,787	.....
Earnings	c1,166,902	1,857,180

a-Based on income before special credit; b-From liquidation of Visioneering-Bunnell Co.; c-Equal to 10 cents a share in the quarter and 33 cents a share in the nine months; d-Adjusted for a two-for-one stock split in March 1969; e-Restated to include acquisitions on a pooling-of-interest basis.

SANDERS ASSOCIATES INC.

Three Months Ended Oct. 31

	1969	1968
Shr Ernd	$.02	$.30
Revenue	38,385,000	43,422,000
Earnings	87,000	1,349,000

CYBERMATICS INC.

Six Months Ended Sept. 30

	1969	1968
Shr Ernd (Loss)	$.07	$(.08)
Revenue	571,277	104,149
Earnings (Loss)	42,753	(26,077)

This report is unaudited.

DEARBORN COMPUT & MARINE

Year Ended Oct. 31

	a1969	1968
Shr Ernd	$2.10	$1.50
Revenue	38,473,000	10,613,000
Earnings	2,715,000	1,250,000

a-Preliminary.

COMPUTER EQUIPMENT CORP.

Three Months Ended Sept. 27

	1969	a1968
bShr Ernd	$.08	$.12
Revenue	4,576,000	4,626,000
Tax Cred	49,000	11,000
cEarnings	208,000	281,000
b9 Mo		
Shr Ernd	.19	.22
Revenue	13,752,000	13,900,000
Tax Cred	121,000	85,762
cEarnings	527,153	561,753

a-Restated by company; b-Based on income before tax credits; c-Equal to 10 cents a share in the quarter and 25 cents a share in the nine months of 1969, compared with 13 cents a share and 26 cents a share, respectively, in the like periods of 1968.

FARRINGTON MFG. CO.

Three Months Ended Sept. 30

	1969	e1968
Shr Ernd	.....	a$.03
Revenue	7,971,000	7,395,000
Spec Items	c130,000	b78,000
Loss	324,000	d217,000
9 Mo		
Shr Ernd	.....	a.09
Revenue	25,051,000	23,215,000
Spec Items	c130,000	b138,000
Loss	227,000	d556,000

a-Based on income before special credit; b-Credit from tax loss carryforwards; c-Loss; from devaluation of the French franc; d-Income; equal to five cents a share in the quarter and 12 cents a share in the nine months; e-Restated to include acquisition on a pooling-of-interest basis.

CTC COMPUTER CORP.

Three Months Ended Sept. 30

	1969	a1968
Revenue	1,706,975	.....
Loss	163,596	.....
9 Mo Rev	2,816,469	.....
Loss	553,419	.....

a-Comparative figures are unavailable as the company was formed in June 1968.

AMPEX CORP.

Three Months Ended Nov. 1

	1969	1968
Shr Ernd	$.40	$.36
Revenue	80,711,000	73,900,000
Earnings	4,333,000	3,501,000
6 Mo		
Shr Ernd	.69	.62
Revenue	149,269,000	132,876,000
Earnings	7,426,000	5,986,000

DATA-CONTROL SYSTEMS

Year Ended Sept. 30

	1969	1968
Shr Ernd	a$.08	.....
Revenue	6,627,886	5,753,279
Spec Cred	46,000	106,000
Earnings (Loss)	b111,750	(90,000)

a-Based on income before special credit; b-Equal to 13 cents a share.

GERBER SCIENTIFIC INSTR.

Six Months Ended Oct. 31

	1969	1968
aShr Ernd	$.32	$.15
Revenue	4,545,338	3,235,763
Earnings	316,660	142,143

a-Based on weighted average shares outstanding, including common stock equivalents.

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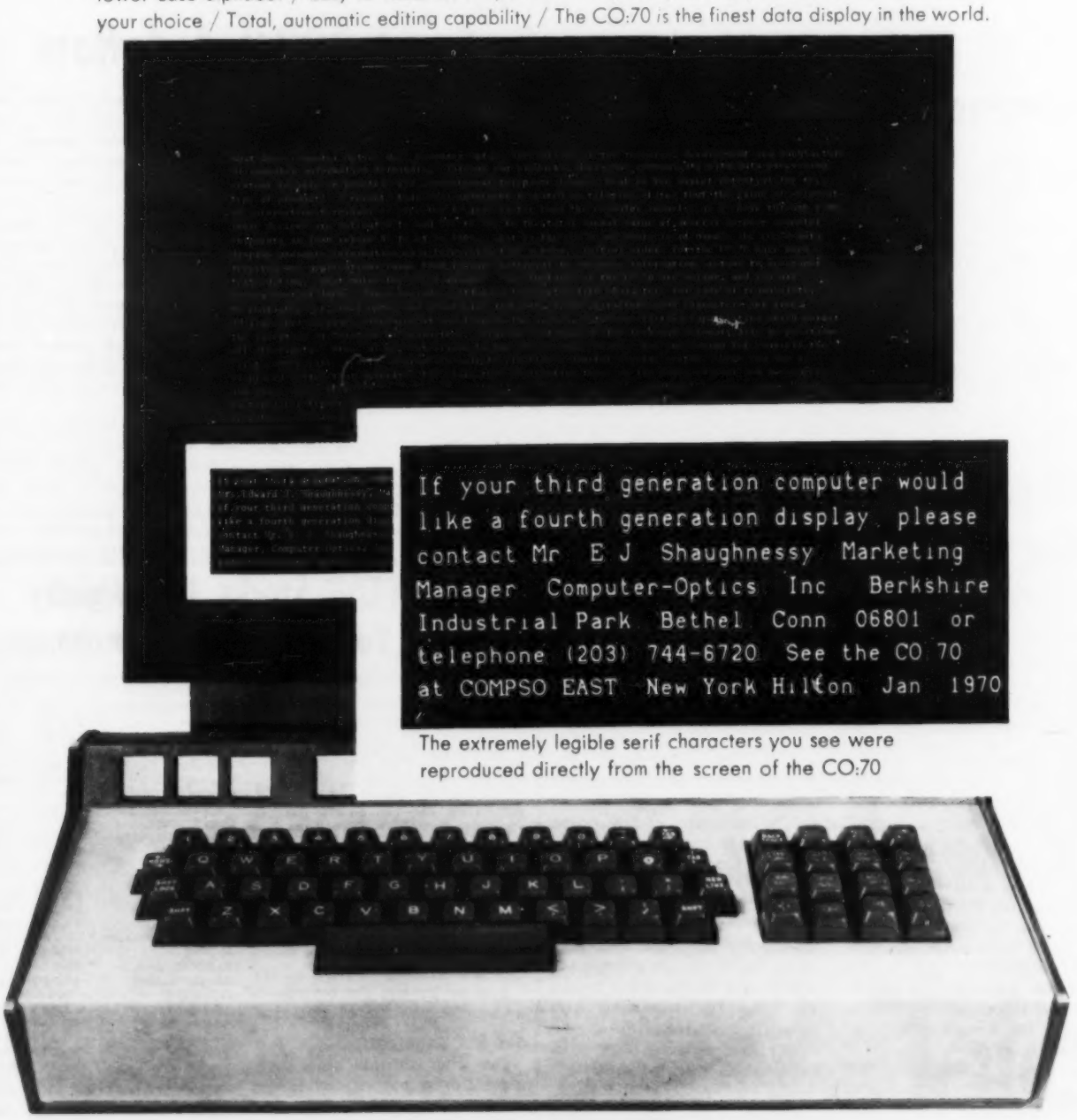
3,000 characters / 100 characters per line, 30 lines per display / 88 character set / Full upper and lower case alphabet / Easy-to-read serif alphanumerics / Stand-alone / Interfaces to the CPU of your choice / Total, automatic editing capability / The CO:70 is the finest data display in the world.



The extremely legible serif characters you see were reproduced directly from the screen of the CO:70

Specialists in display systems
Computer Optics

COMPUTER STOCKS: TRADING SUMMARY

WEEK ENDED DEC. 19, 1969

COMPUTER SYSTEMS

EXCH	1969 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK % CHANGE
N	167-120	164	BURROUGHS CORP	+ 3	1.86
N	69- 36	36 7/8	COLLINS RADIO	- 1 3/8	-3.59
N	159-110	117 3/4	CONTROL DATA CORP	+ 1/2	.43
A	102- 54	92 7/8	DIGITAL EQUIPMENT	- 7/8	-.93
N	25- 10	10 5/8	ELECTRONIC ASSOC.	- 1 1/8	-9.57
N	98- 74	75 1/4	GENERAL ELECTRIC	- 3 3/8	-4.29
N	114- 75	103 3/8	HEWLETT-PACKARD CO	+ 2 1/2	2.48
N	157-107	147 7/8	HONEYWELL INC	- 1/8	-.08
N	368-291	360 1/4	IBM	+ 3/4	.21
N	157-108	152 3/4	NCR	+ 4	2.69
N	41- 35	35 5/8	RCA	- 3/8	-1.04
N	58- 30	31 1/4	RAYTHEON CO	- 2 1/4	-6.72
O	43- 3	3 1/4	SCI. CONTROL CORP.	- 1 3/4	-35.00
N	55- 36	37 1/4	SPERRY RAND	- 3/4	-1.97
A	53- 26	49	SYSTEMS ENG. LABS	- 1 3/4	-3.45

PERIPHERALS & SUBSYSTEMS

EXCH	1969 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK % CHANGE
N	85- 59	60 7/8	ADDRESSOGRAPH-MULT	- 5	-7.59
O	71- 13	14 1/8	ALPHANUMERIC	+ 3/8	2.73
N	49- 32	44 7/8	AMPEX CORP	- 1/8	-.28
O	19- 9	12 1/4	BOLT,BERANEK & NEW	- 1	-7.55
N	17- 9	14 1/4	BUNKER-RAMO	+ 1/4	1.79
A	37- 18	26 7/8	CALCOMP	+ 1/2	1.90
O	38- 11	11 1/2	COGNITRONICS	- 1	-8.00
A	16- 7	12 3/8	COMPUTER EQUIPMENT	- 3/4	-5.71
A	27- 12	23	DATA PRODUCTS CORP	+ 1/4	1.10
O	22- 13	15	DIGITRONICS	+ 1/4	1.69
N	84- 43	82 7/8	ELECTRONIC M & M	- 3/4	-.90
O	18- 5	5 3/4	FABRI-TEK	- 1/4	-4.17
O	37- 13	15 1/4	FARRINGTON MFG	+ 5/8	4.27
O	21- 10	14 1/4	INFORMATION DIS	+ 1/4	1.79
A	75- 17	72 3/8	MILGO ELECTRONICS	+ 4 1/8	6.04
A	89- 59	72 3/8	MOHAWK DATA SCI.	+ 7/8	1.22
O	118- 42	52	OPTICAL SCANNING	---	---
O	31- 17	17 7/8	PHOTON	- 1/8	-.69
A	46- 23	34 1/2	POTTER INSTRUMENT	- 1 1/4	-3.50
O	76- 54	73 1/2	RECOGNITION EQUIP	+ 1 1/2	2.08
N	41- 22	25 1/4	SANDERS ASSOCIATES	+ 1/4	1.00
O	85- 28	33	SCAN DATA	---	---
O	36- 16	16	TALLY CORP.	- 1	-5.88
N	115- 85	105	XEROX CORP	- 2 1/8	-1.98

SUPPLIES & ACCESSORIES

EXCH	1969 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK % CHANGE
O	47- 31	40 1/2	ACME VISIBLE	+ 3 1/2	9.46
N	22- 11	13 5/8	ADAMS-MILLIS CORP	- 7/8	-6.03
O	27- 23	23	BALTIMORE BUS FORM	- 1	-4.17
A	29- 17	21 3/8	BARRY WRIGHT	- 1/4	-1.16
O	44- 26	30 1/2	DATA DOCUMENTS	- 3/4	-2.40
N	42- 18	18 3/4	ENNIS BUS. FORMS	+ 1/4	1.35
N	173- 65	161 1/4	MEMOREX	- 7/8	-.54
N	118- 94	110 3/4	3M COMPANY	- 1/2	-.45
O	37- 29	36 1/4	MOORE BUS FORMS	+ 1 3/8	3.94
N	49- 36	39 5/8	NASHUA CORP.	- 3/8	-.94
O	48- 30	46	REYNOLDS & REYNOLD	+ 3	6.98
O	31- 23	26 3/4	STANDARD REGISTER	- 1/4	-.93
N	36- 25	33 1/4	UARCO	- 5/8	-1.85
A	20- 10	20	WABASH MAGNETICS	+ 1	5.26
O	40- 28	39 1/4	WALLACE BUS FORMS	- 3/4	-1.88

SOFTWARE & EDP SERVICES

EXCH	1969 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK % CHANGE
A	32- 19	24 7/8	APPLIED DATA RES.	+ 1 1/8	4.74
O	14- 5	5	ADVANCED COMP TECH	- 3/4	-13.04
O	19- 6	8 1/8	ARIES	+ 1 7/8	30.00
A	122- 35	37 7/8	AUTOMATIC DATA PRC	+ 1/2	1.34
O	15- 7	15 1/2	AUTO SCIENCES	- 1/4	-1.59
O	17- 7	8 3/4	BRANDON APPL SYS	- 1/4	-2.78
A	21- 9	10 1/2	COMPUTER APPL	- 1/8	-1.18
O	16- 6	11	COMPUTER ENVIRON	- 1	-8.33
O	47- 13	13	COMPUTER NETWORK	- 1 1/2	-10.34
N	34- 19	32 1/4	COMPUTER SCIENCES	+ 1 1/8	3.61
O	40- 9	9	COMPUTER USAGE	- 2 1/2	-21.74
A	72- 37	65	COMPUTING & SOFT	+ 1 3/8	2.16
O	24- 3	3 7/8	DATAMATION SERVICE	- 7/8	-18.42
O	17- 5	6	DATATAB	+ 1/2	9.09
O	15- 4	4 1/2	DIGITEX	- 1/4	-5.26
A	38- 8	9 3/4	ELECT COMP PROG	- 1/2	-4.88
O	38- 12	17 1/8	INFORMATICS	+ 5/8	3.79
O	19- 8	8 7/8	MATRIX CORP.	- 1/4	-22.22
O	22- 4	8	NAT COMP ANALYSTS	+ 3 1/2	77.78
A	49- 23	49	PLANNING RESEARCH	+ 2 3/4	5.95
O A	11- 3	3 1/2	PROGRAMMING & SYS	---	---
O	10- 2	2 1/2	SOFTWARE SYSTEMS	- 3/4	-23.08
O A	37- 2	2 7/8	STRATEGIC SYS	+ 1/8	4.55
O	36- 11	18 1/4	TBS COMP CENT INC.	- 3/4	-3.95
O A	12- 3	3 1/2	UNITED DATA CENTER	- 1/4	-6.67
N	155- 53	105 1/8	UNIVERSITY COMP.	- 3/8	-.36
O A	38- 22	29 1/2	URS SYSTEMS	+ 1/2	1.72
O A	16- 6	6 3/4	U.S. TIME-SHARING	- 1/4	-3.57

LEASING COMPANIES

EXCH	1969 RANGE	CLOSING PRICE		WEEK NET CHANGE	WEEK % CHANGE
O A	14- 7	7 7/8	RANISTER CONTIN	- 5/8	-7.35
O	45- 24	26 3/4	ROOTHE COMPUTER	+ 1	3.88
O	18- 4	7	COMPUTER EXCHANGE	- 1/2	-6.67
A	34- 18	18 1/4	COMPUTER LEASING	- 7/8	-4.58
O	13- 7	12 7/8	CYBER-TRONICS	+ 2 7/8	28.75
A	68- 23	30 3/4	DATA PROC. F & C	- 1/4	-.81
O	16- 5	6	DATRONIC RENTAL	---	---
A	52- 22	23	DEARBORN COMPUTER	- 2 7/8	-11.11
A	16- 8	9 1/2	DPA, INC.	- 1/8	-1.30
A	45- 16	20 1/2	GRANITE MGT	- 1 3/4	-7.87
A	28- 12	13 1/2	GREYHOUND COMPUTER	---	---
N	54- 22	25 7/8	LEASCO DATA PROC.	+ 1 5/8	6.70
O	9- 4	5 1/4	LECTRO COMP LEAS	- 1/4	-4.55
A	57- 17	18	LEVIN-TOWNSEND CMP	- 1 1/2	-7.69
O	8- 2	2 1/4	LMC DATA, INC.	- 3/8	-14.29
O	14- 2	2 1/2	MANAGEMENT ASSIST	- 1/8	-4.76
O A	12- 6	8	NCC LEASING	+ 1/4	3.23
O	34- 4	6	SYSTEM CAPITAL	+ 1 1/2	33.33
A	28- 13	16 3/4	U.S. LEASING	- 1 1/4	-6.94

New Registrations

CONDYNE, INC., 530 Fifth Ave., New York, N.Y. 10036, a company that develops and markets educational programs recorded on cassette-type audio tapes intended to be used primarily in the educational, professional, industrial and commercial markets, filed to register 200,000 shares of common stock. Proceeds, at $5 per share maximum, intended for retirement of its 6% subordinated promissory notes; working capital; recording fees, production of master tapes and for an inventory of tapes for the PLI programs; advertising; possible future advance royalty payments or for test marketing purposes; for an inventory of player/records; computer services; and for general corporate purposes. The underwriter is Cummings & Taylor Inc., 24 Broadway, New York, N.Y. 10004.

CONTROLS RESEARCH CORP., 11814 Western Ave., Garden Grove, Calif., a company engaged in the design, development, manufacture, and marketing of electronic keyboards and pushbutton switches for a wide variety of computer-related and data processing devices, filed to register 385,000 shares of common stock, to be offered for subscription by holders of the common stock of Midtex, Inc. (parent) at the rate of one share for each 3-1/2 Midtex shares held. Proceeds, at $3 per share maximum, intended for repayment of short-term loans; financing development and operating expenses and capital; and for general corporate purposes. No underwriter is involved.

UNIVERSITY COMPUTING CO., 1300 Frito-Lay Tower, Dallas, Texas 75235, a company that operates a computer utility network, provides data processing services, computer software services and other professional services relating to the use of computer equipment, and develops, manufactures and sells peripheral equipment, filed to register $40 million of convertible subordinated debentures, due 1994. Proceeds intended for the reduction of indebtedness to banks incurred primarily in connection with the purchase of computer equipment; for working capital; general corporate purposes; for the projected purchase in 1970 of additional Univac 1108 computer systems. The underwriter is Kidder, Peabody & Co., Inc., 20 Exchange Place, New York, N.Y. 10005.

BRANDON APPLIED SYSTEMS, INC., 1700 Broadway, New York, N.Y. 10019, a company that provides services for management personnel, principally to present and prospective users of electronic data processing equipment, filed to register 79,715 shares of common stock. Of these shares, 4,715 are outstanding shares which may be offered for sale from time to time by the present holders thereof at prices current at the time of sale ($15 per share maximum), 5,968 shares are issuable upon exercise of common stock purchase warrants, and 75,000 have been issued or are issuable upon exercise of options granted by the company.

AUTOMATED CONCEPTS, INC., 477 Madison Ave., New York, N.Y., a company that provides computer consulting, systems analysis, and programming services, principally for management information and other business and scientific purposes, filed to register 125,000 shares of common stock. Proceeds, at $4 per share, intended for the establishment of regional offices in Washington, D.C., and Boston, for the repayment of borrowings for working capital, and other corporate purposes. The underwriter is Arnold, Wilkens & Co., Inc., 50 Broadway, New York, N.Y.

THE COMSONIC CORP., 132 W. 31st St., New York, N.Y. 10001, a company that offers various products and services to users of on-line computer systems, and that proposes to offer on-line computer systems and related equipment for installment sale or lease, filed to register 400,000 shares of common stock and 200,000 common stock purchase warrants. Proceeds, at $15 per unit maximum, intended for the payment of outstanding loans and other current obligations; for the establishment of additional facilities; for hardware and software design modifications and additions to the company's Comdac-8; for the development of a low-cost computer system prototype and a low-cost telecommunications terminal prototype; and for other corporate purposes. No underwriter is involved.

PRECISION COMPUTER CORP., 1357 Monroe Ave., Rochester, N.Y., a company organized for the purpose of purchasing and leasing electronic data processing equipment, including computers, and for establishing, promoting and conducting a school of instruction for the programming of computers, filed to register 650,000 shares of common stock. Proceeds, at $3 per share, intended to discharge indebtedness; to establish, promote and conduct a school for computer programming; to pay bank indebtedness; to be added to the company's general funds; and to be used for general corporate purposes. No underwriter is involved.

INTELCOM, INC., 2950 Metro Drive, Minneapolis, Minn. 55420, a company that intends to engage in the marketing and operation of industry or application-oriented computer-communication systems, filed to register 400,000 shares of common stock. Proceeds, at $10 per share, intended for the purchase (and/or lease) of computers, computer peripheral equipment, and communications terminal systems; for analysis, development, and programming of computerized systems; for the company's general funds, and for general corporate purposes.

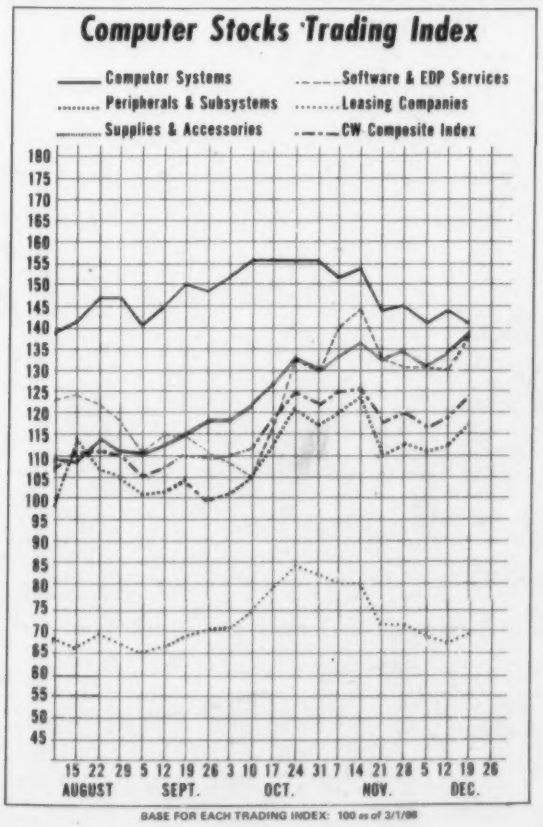
AUTOMATIC DATA PROCESSING, INC., 405 Route 3, Clifton, N.J. 07015, a company engaged in the EDP service business, filed to register 654,807 shares of common stock. Proceeds, at $36.75 per share maximum, intended for general corporate purposes, including expansion of operations. The underwriter is Kuhn, Loeb & Co., 40 Wall St., New York, N.Y.

COMPUTER SERVICENTERS, INC., Daniel Bldg., Greenville, S.C. 29602, a company organized to acquire, operate, and develop commercial data processing service centers, filed to register 950,080 shares of common stock. Proceeds, at $3.3125 per share maximum, intended for the reduction of bank indebtedness and indebtedness to certain stockholders and an affiliate of a stockholder, for working capital, and for general corporate purposes. No underwriter is involved.

PORTFOLIO SCIENCES, INC., 1030 N. Kings Highway, Cherry Hill, N.J. 08034, a company engaged in formulating and developing a variety of computer generated investment advisory and related services for sale primarily to the financial community, filed to register 300,000 shares of common stock. Proceeds, at $5 per share, intended for financial information and development of statistical data relating to publicly held corporations, various industries, and the general economy; for the design and refinement of models and systems for testing investment strategies; for developing and implementing the company's portfolio management services; for developing and implementing a system for evaluating the performance of securities portfolios; for comparing the performance of portfolio managers and securities analysts; for market research, test-marketing, and marketing of the company's services; for working capital, and for general corporate purposes. The underwriter is Axelrod & Co., 50 Broadway, New York, N.Y. 10004.

INTERSEARCH TECHNOLOGY, INC., 39 Broadway, New York, N.Y. 10006, a company engaged primarily in the business of publishing and selling a stock market advisory service utilizing a computer program analysis of stock market transactions, filed to register 100,000 shares of common stock. Proceeds, at $8.50 per share, intended to finance a campaign to increase subscriptions through advertising and purchase of expired subscription lists of competitors; to advertise and promote the company's portfolio management service; to develop additional computer programs; to advertise these new computer programs if such programs are to be developed; to be added to the company's working capital; and to be used for general corporate and working capital purposes. The underwriter is Willard Securities, 445 Park Ave., New York, N.Y. 10017.

Computer Stocks Trading Index



BASE FOR EACH TRADING INDEX: 100 as of 3/1/69

Earnings Reports

PRIVATE AND COMPUTER SCHOOLS

Year Ended Aug. 31

	1969	1968
Revenue	1,134,172	1,280,678
Earnings (Loss)	(84,957)	132,980

SMC COMPUTER SERVICES, INC.

Year Ended Aug. 31

	1969	a1968
Shr Ernd	$.23	.....
Revenue	127,338	.....
Earnings	17,384	.....

a-Figures are unavailable as the company was organized in 1968.

SYSTRON-DONNER CORP.

Three Months Ended Oct. 31

	1969	a1968
Shr Ernd	$.25	$.22
Revenue	7,491,000	6,293,000
Earnings	375,900	338,300

a-Restated by the company.

WALLACE BUSINESS FORMS

Three Months Ended Oct. 31

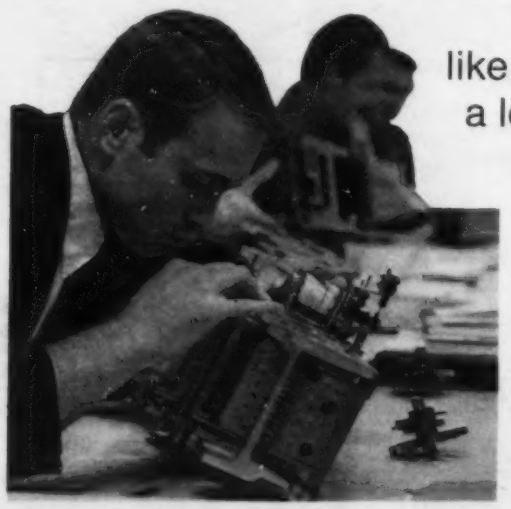
	1969	1968
Shr Ernd	$.50	$.45
Revenue	7,432,000	6,708,000
Earnings	440,000	401,000

WHY WE'VE TRAINED MEN FOR A VANISHING BUSINESS.

The unit record business is disappearing so fast it takes a service force of almost 1,000 men to keep our customers happy. There are over 6,000 customer installations, many of which run their punched card equipment day and night.

Here we are in this so-called defunct business and still we're working nights and weekends keeping up with the workload. The only thing that's vanished is the eight-hour day.

That's not all that surprising considering there are about 40,000 unit record installations in this country, with an estimated 600,000 pieces of punched card machines now in use.



With numbers like those you need a lot of well trained professionals in a lot of places. Which is why we can provide 24-hour service in more than 50 locations.

It would be nice to be in a business that wasn't always vanishing. But you get used to it. They first closed the book on the unit record business 15 years ago when IBM brought out the 650. Then came the 705. Now it's the System/3 and we are once again the Ghost of Data Processing Past.

Yet everywhere you look you see those familiar old tabs and sorters and calculators, humming away, getting the work out. Unglamorous, uncomplicated, and inexpensive. So inexpensive, that it's possible, for the price of one hour's computer time, to rent a small unit record combination for a whole month.

A lot of people know this, and a lot of people take advantage of it to get more out of their computers, and at great savings. Bog a computer down with a lot of raw data and you're likely to bog down your profit and loss statement as well.

Then there are things like computer editing and back-up. Not exactly the stuff of tomorrow's headlines, but not to be ignored either. Especially when the auditors are hanging around.

In the salons of technology they twitter about the new computers, and sometimes we do, too. But all those workaday calculating tasks keep piling up, problems in search of an economical solution. That's why all those punched card machines are still around. Along with all those well trained men to care for them. You need good men in a vanishing business.

☐ Please send me your new unit record brochure.
☐ I would like to discuss my data processing needs.

Name_____

Company_____

Address_____

City_____ State_____ Zip_____

MAI Equipment Corporation
300 East 44th Street, New York, New York 10017